NEWS IN BRIEF

NCCN report by Christmas

FOLLOWING acceptance of its report by Industry Minister Eric Varley, the National Committee on Computer Networks has finished its work and is disbanding.

The NCCN was set up by the DoI 2½ years ago to advise on policy for the installation and operation of computer networks (CW, November, 4, 1976). Its report should be published before Christmas.

Inmos for Bristol

AS predicted (CW November 2) the Inmos Technology Centre is to be in Bristol. The company is currently in temporary residence at the Whitefriars International Business Centre in Lewins Mead, Bristol. It has yet to be decided whether the company remains in this building, or moves to a more permanent residence in the city.

Laser optical disc

FOLLOWING the announcement by Philips that it is developing a very high capacity disc store written and read by a laser (CW, November 16), RCA in the US has revealed that an optical disc that uses a laser source to inscribe and read data is under development at its Advanced Technology Laboratories at Camden, New Jersey.

Impact on jobs

THE APEX word processing working party today (Thursday) begins an examination of the impact of microtechnology on white-collar employment. The first meeting took place at the Cora Hotel, London, and among the working party's members are Ken Smith, APEX vice-president.

Mixed reaction to report on user needs

REACTION to the report on User Requirements in DP from a committee of the BCS (CW, November 2) has so far been mixed. The report, which is published this week, is felt by some observers to reflect particularly on the Society, but others feel it contains little that is original.

The report expresses a wide range of criticisms from users on how their needs are being met — or are not being met — by the industry. Complaints are made about poor system performance, lack of standards, poor support, too many innovations being pressed upon them, and the failure of responsible institutions to train enough specialist staff. The failure to promote professionalism is felt to reflect on the BCS.

Donald Moore, of accountants Peat Marwick Mitchell, who chaired the committee, feels strongly that the BCS must determine its role in helping users get what they need. In particular, the promotion of standards and education, where he feels there is a "desperate situation", must be the subject of major projects staffed by full-time people, and the BCS must take the initiative in getting these going.

Casting doubt on the value of the report as a whole, Aharon Orlansky, a securities analyst with stockbrokers Oppenheimer, reiterated this point and said it was obvious that anyone would like machines twice as good for half the cost.

"What are these users prepared to give up in exchange for the better performance and service they are demanding?" he asked. "You can't get a Rolls-Royce for the price of a Chevrolet." It would have been useful if the report had given manufacturers some original insight into how to improve user satisfaction.

David Firnberg, director of the National Computing Centre, said the report indicated that the BCS had not successfully sold itself to people outside the immediate confines of the computing community, and in this regard the report could do nothing but good. But the society is becoming more positive, he said, with its move to a new headquarters and the appointment of a full time secretary general.

BCS president Frank Sumner, however, does not think the report is particularly a criticism of the society. He says the society is conscious of the faults mentioned, and is constantly changing to try to improve. It has groups looking into membership and recruitment, and its exam structure, to make the society a more useful body.

'Tackle information technology at European level' call

A CALL for action on information technology at a European level was made in Brussels this week by EEC Commissioner Etienne Davignon. Opening an EEC seminar on Computer Aided Design, Vicomte Davignon, commissioner responsible for industrial policy, outlined three vital tasks which only the EEC could fulfil.

"First, we need a broadband communications infrastructure on a European scale," he said.

"Second, we need to support *the development of the key electronic technologies of the future to permit Europe to become more than a follower, as it* has been up to now in microelectronics.

"Third, we must develop activities in the field of standardisation and procurement which will alone enable us to develop a true European market."

Commissioner Davignon added that Europe had a social duty to ensure that these formidable electronic tools became available to the individual and did not remain concentrated in government hands.

The conference, at the Brussels Hilton, was called to present and debate the results of a 16-month EEC study into the whole field of computer-aided design. Saget of Luxembourg was prime contractor on the study, with support from Plessey of the UK, Nixdorf of Germany and SEMA of France.

Commissioner Davignon welcomed some 300 delegates from Europe, the US, Japan and the Soviet Union, and underlined the Community's outward-looking approach.

"We must be ready to co-operate with bodies outside Europe: we cannot afford to re-invent the wheel," he said.

The full results of the EEC study into CAD have not been published, but the principal recommendation is for the establishment of an EEC database of electronic component modelling techniques covering the whole field from gate level to full integration. It calls for an expansion of educational facilities in the CAD field, also mentioned by Commissioner Davignon.

Stressing that Europe had to make major applications of new technology if it were to continue to prosper at a time when Third World countries were mastering traditional production techniques, he revealed that employment considerations would be a key factor in deciding the final shape of the EEC's much-delayed programme of data processing projects.

Winner of the 1978 Lombard RAC Rally, Hannu Mikkola of Finland (right) and his co-driver Arne Hertz in the computer room with NCR programmer Sue Clarke. Instant results for each stage of the rally were provided by an NCR 8250.

Lease firms face losses

BECAUSE the residual value of hundreds of IBM mainframes has crashed since the introduction of the low cost 303X systems, leasing companies are facing the possibility of heavy losses and are likely to have problems with insurances taken out to guard against users invoking break clauses.

The bulk of the seven-year leases are insured with Lloyds, and Itel, one of the world's biggest leasing companies, has already written new leases for about 25 machines whose original leases had reached the four-year break clause.

Commenting on the fact that it had not claimed under the original policies, an Itel spokesman said it would not do this unless the reduction in a machine's residual value was "catastrophic." Itel is meeting with its Lloyds underwriters this week to discuss the matter.

The question of whether Lloyds might dispute claims under residual value policies arose late last year when they stopped providing such cover.

CAD helps police with their inquiries

A MUCH more flexible alternative to the conventional Identikit and Photofit methods used by the police to build up a picture of a suspect's face has been developed by the Computer Aided Design Centre on behalf of the Police Scientific Development Branch. It could have great export potential.

The system involves a colour graphics terminal linked to a computer in which a databank of standard facial features has been stored. The features can be selected to build up a composite face on the display that fits the description of the witness.

The biggest advantage of the CADC system over conventional methods is that the policeman operating the display can modify individual facial features on the screen to fit more closely a witness' description. The tonal range of the face colouration can also be modified.

PSDB personnel are currently evaluating the system at CADC in Cambridge where the software is being run on a Prime 300 minicomputer. The fact that it is written in Fortran means that it could be used with most kinds of computer, including most police systems.

The CADC Gino graphics package, which is also written in Fortran, is run on systems all over the world.

The police system is currently being tested using the CADC advanced graphics display terminal, otherwise known as Bugstore.

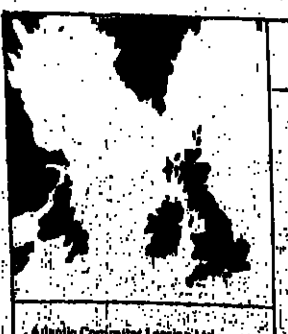
Compec's Pet prize

ONE of the biggest prizes to be won at the many competitions being run in connection with Compec is a Commodore Pet computer system. This is being offered by Livingston Hire in a free competition of question answering and slogan writing.

Typical questions include the nominal rpm of a floppy disc drive, stating what ICE is, and guessing which of the following — 9905, 1284, 6502 and 6150 — is a microprocessor.

The slogan required, in nine words or less, is to promote the use of microprocessors in industry.

One of the judges of the competition is Computer Weekly's micro news editor, Martin Banks, and the winner is expected to be announced on or before January 19, 1979.



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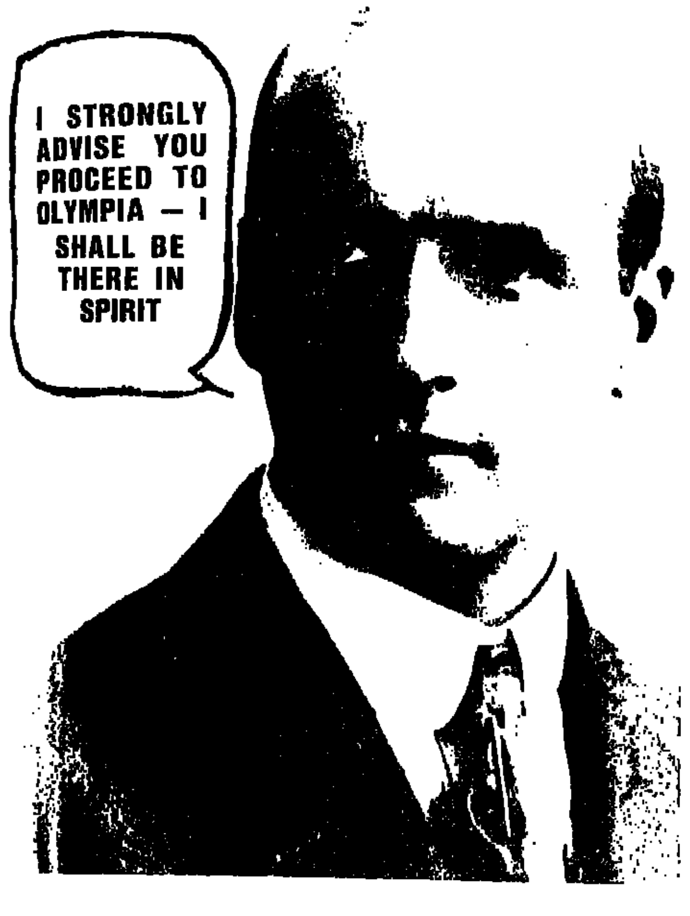
COMPUTER WEEKLY SPECIAL

COMPEC'78 PREVIEW



All the world's on show

COMPEC 78 is a sell-out success — even before the doors open! For Compec 77, 5,500 applications were received for pre-registration tickets, and attendance was something over 14,000. This year, advance bookings have soared to over 23,000, making the organisers' forecast of 18,000 visitors look pessimistic to a fault.

The clamour for tickets has been matched only by the clamour from exhibitors for exhibition space at the show. Confounding the fainthearts who predicted doom if Compec moved from the comfortable confines of the Wembley Conference Centre, exhibition space at Olympia's National Hall is a sell-out, and stands will be crammed to bursting with more hardware than ever before.

In keeping with this wave of enthusiasm whipped up by Compec 78, Computer Weekly presents a special 32-page supplement dedicated to the show, mailed in advance of the regular news and jobs section.

Much more than a simple exhibition preview this Computer Weekly special really is Something Special. Many of the familiar features from the regular weekly edition appear with a Compec flavour, followed by a whirlwind tour of the stands. A complete list of exhibitors, products and stand numbers appears in the official Compec catalogue, available at the show.

There's Compecview and Compec Focus on page two. Then on page three, a fascinating feature tells all you ever wanted to know about the typical visitor to Compec.

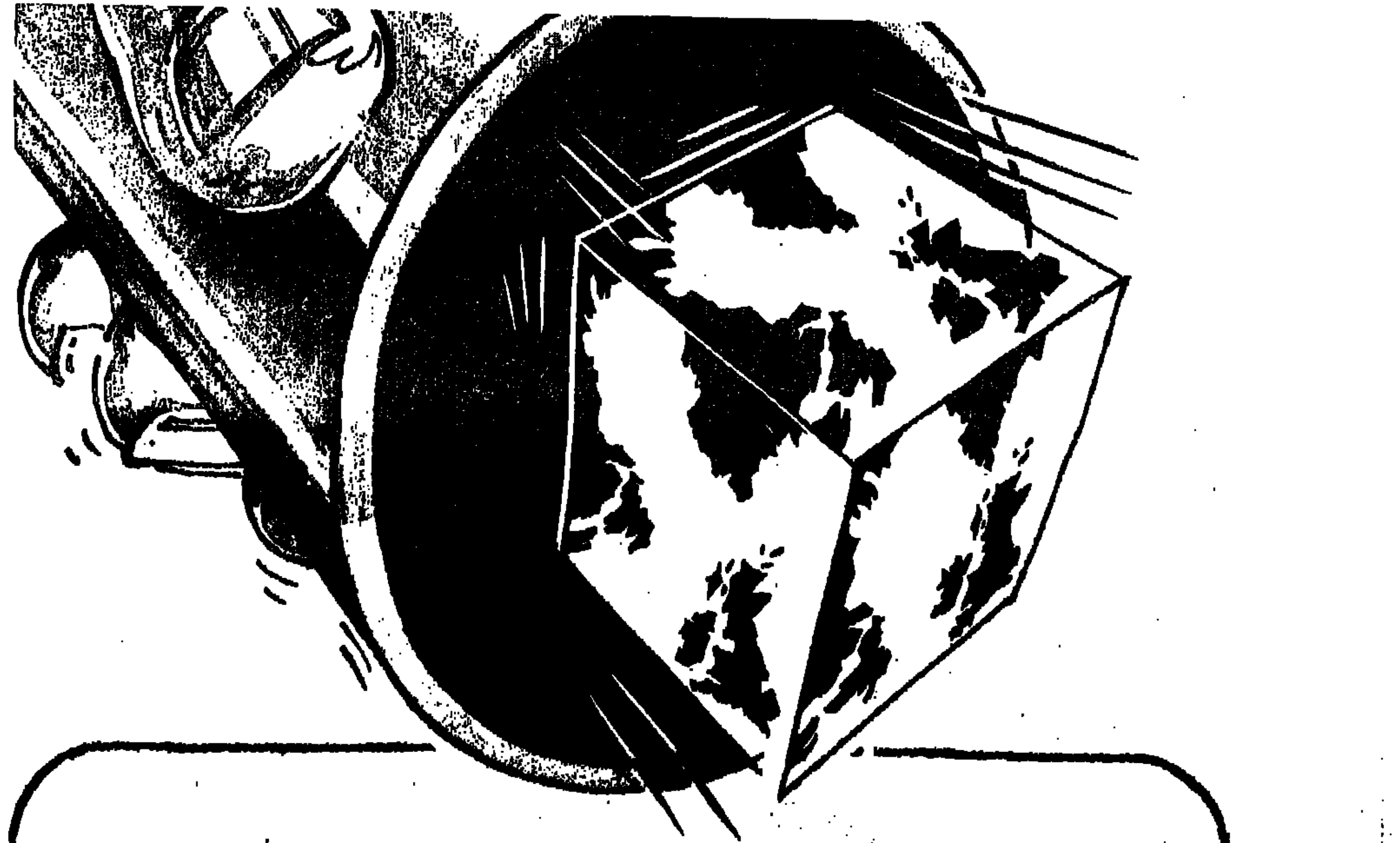
On page four, Keith Jones casts a seasoned eye over the OEM scene, explaining the forces which drive this oft-misunderstood market today, and indicating the subtle undercurrents and changes which are taking place.

For light relief, Chad slips smoothly into page five with Compec Downtime, telling it like it is for the man on the receiving end at Compec, the humble standholder.

On page six, Peter Hewitt's authoritative Software File discusses the microprocessor orientation of much of the software on offer at the show, and on pages 12 and 13, Martin Banks' Compec Micro News finds that the show should prove a happy hunting ground for personal computer buffs.

Throughout the product section the inimitable Don looks at Compec through the ages, while on page 15 you are invited to identify one or two brilliant innovations of the past, and to enter our GRAND BALLOON COMPETITION, with a first prize of £25.

The gentleman at the top of this page? One of the pioneers of our industry to whom we all owe so much, he is Frederick Rosen Bull, 1882 to 1925, who in 1919 patented a punched card controlled adding machine register. His name lives on today, enshrined in the title of the Franco-American computer giant CII-Honeywell Bull.



It's packing Olympia to the galleries—and still growing

REGARDLESS of what we say here, regardless of what people may think about exhibitions in general, one thing is certain about Compec 78 even before it opens next week: the show will be a resounding success.

From small beginnings, Compec has come of age. It is now unrivalled as the one major annual UK computer industry show. It has outgrown the West Centre Hotel, the Wembley Conference Centre; the not altogether happy deviation down to Brighton, when bomb scares and disrupted railway schedules threatened to wreck the show, is forgotten.

Olympia is now the only exhibition centre in London big enough to take it, and even the National Hall will be packed to the galleries with a bigger and more comprehensive array than ever before of peripheral and small computer hardware.

Compec has undoubtedly picked up additional business from the decision of the US Department of Commerce to close the US Trade Centre. US companies are clamouring for space because without the US Trade Centre there is really nowhere else to go.

But successful exhibitions have an internal dynamism which propels them forward, dictates their inexorable growth and metamorphosis.

From the start, Compec was a good idea. An intimate show where industry professionals could meet each other, companies seeking OEM hardware could meet companies in business to supply their needs.

As shows go, it is popular with exhibitors, because unlike the block-busting continental jamborees led by Hanover and Sicob, it is all over in three days — and as any harassed standholder at Sicob will tell you, all the really important business is done in the first three days.

Compec is a show for professionals, defiantly so. Those who exhibit can be sure that, while any really serious student can get into the hall, there is no threat of hordes of bored schoolchildren invading the stands, devouring expensive literature like locusts.

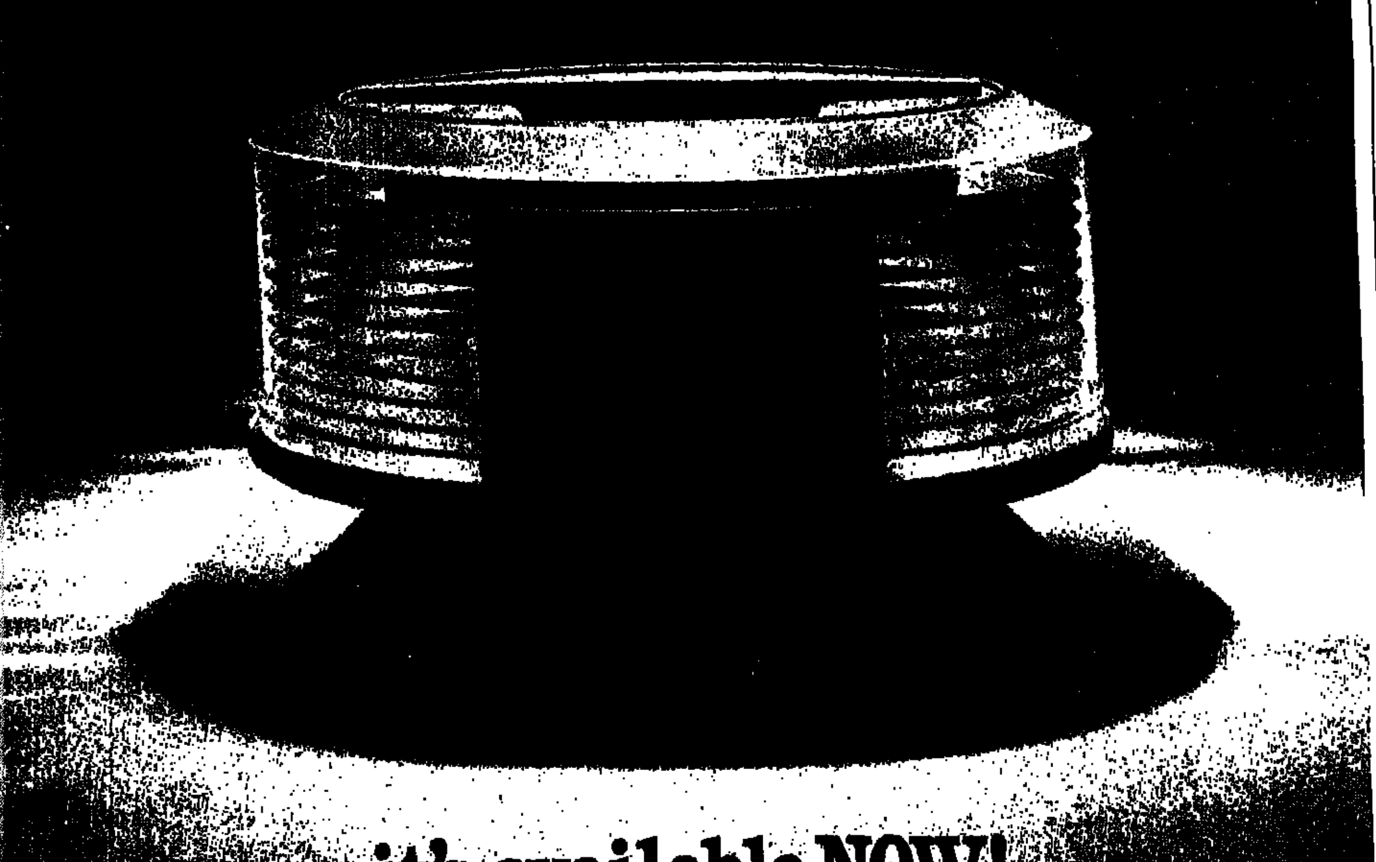
Compec's runaway success is certainly due in part of the lack of any really large and well-established UK computer exhibition. That at least is the way it has been up to now.

But a computer show which includes equipment as large as the Documation 3000 printer, as powerful as the new Harris minicomputers, as esoteric as the latest offering in the personal computing field, as futuristic as the new viewdata terminals and as vital as the latest communications products from companies like EMI Technology can hardly be regarded as "small" any more.

It is beginning to look as if Compec will outgrow even Olympia's National Hall within a year or two, will soon be lending its voice to the clamour for a really comprehensive modern exhibition centre on an international scale for London. With all the derelict dockland crying out for redevelopment it is frustrating that there still appears to be nobody with the courage to take the plunge.

Readers will be starting to wonder how any exhibition which threatens to outgrow Olympia can continue to be described as "small." This scepticism is justified. For the truth is that Compec remains small only in conception. What will become abundantly clear by the time doors close at Olympia on Thursday night next week is that in Compec, the UK does at last have a major annual computer exhibition which can stand comparison with the best in the world.

Like that shining example of a successful and enterprising business, Digital Equipment Corp, now a billion dollar company, Compec will be seen as the exhibition which grew big by thinking small.



Trapeze acts and tight-rope walking

A USERS' guide to Compec is long overdue. The snag of course is that it would have to be upgraded annually if only to keep pace with expansion and location.

Recently Compec seems to have been competing with the Philips Data Train in the number of locations visited. Last year's cramped Wembley Centre has given way to Olympia which is perhaps better noted for Xmas circuses and spectaculars.

Trapeze acts and tight-rope walking will no doubt be in existence on day one of Compec. "It will be all right on the day" may be a maxim of show business. But stand exhibits are seldom up and running on time. Most of the running in evidence is that of salesmen and engineers going round in circles.

For those interested in behind-the-scenes working, a visit on day one is recommended. The resources of many exhibitors are only too visible. Managing directors offer advice to the clustered engineers, while trying to avoid the freshly painted stand barriers. Pausing only to grimace at passing photographers, industry VIPs and stray journalists, the stand executives have little enthusiasm for potential customers.

Visiting DPMs could well take note of the reasons given for the non-operation gear. Top of the Compec charts is blaming the Post Office for late delivery of suitable modems. Next comes the environment. "You can't expect even an oscilloscope to function in this heat and dust." Misplaced components come next in the league backed by "confusion in the German or Swiss head offices."

For the enthusiast, day one is not to be recommended. Computer print portraits, biorhythm plot charts and battleship war game applications may not be fully operational. The opportunity should rather be taken to evaluate the respective merits of the freely disposed plastic bags, badges and 1979 calendar cards.

When this particular activity palls, attention can be turned to an appraisal of the demonstration girls. In the past, Racal-Milgo and Semaphore Computer Systems have scored notable points. Compec is not the arena for watching IBM slogging it out with competitors.

Rather it is the occasion when IBM competitors joust between themselves. Storage Technology and Memorex, while happy to be plug-compatible with IBM, would in no way wish to share plugs, compatible or otherwise.

A return to the installation base complete with ample supplies of pamphlets, brochures and fact sheets is almost obligatory. The success of the outing almost depends on the volume of take-away info. A transient dumping ground is therefore essential to the devoted visitor.

For devotees of computing sciences, a visit on day two is the best bet. Analysts and programmers can be overheard asking rather apprehensive sales personnel whether their system multitasks on a remote stand-alone processing basis and incorporates RJE emulators?

Day three is the relaxing one. Equipment and sales teams are all functioning. The only stand worries are whether all the sales enquiries can be followed up before next year's Compec.

Meanwhile the Compec organisers are having to face facts. Microprocessing may be the current rage. But computer exhibitions come very definitely jumbo-sized.

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Who goes to the big show—and why?

A survey of the nature of some of the 14,000-plus visitors to last year's Compec reveals some interesting, and occasionally surprising, data on the needs, background, concerns and views of those for whom the big show is designed. TIM PALMER reports.

THE bald statistics show that 14,349 people visited Compec last year. As a statistic it is of limited interest. Who were those 14,349 people who filled in registration tickets? Why did they visit Compec? What were they looking for? Who are you, the visitor, likely to bump into at the show? Who among the visitors is likely to be seeking out the stand of you, the exhibitor?

Those are the important questions to which people interested in the exhibition want answers.

Fortunately, answers are available. Last year, Compec's organisers, Iliffe Promotions, called in a market research company, Exhibition Surveys to find out exactly what kind of person does go to Compec. The firm prepared a report based on replies from 489 people who visited the show, and it makes very interesting reading.

The largest proportion of the total, 19%, are in research and development, and they are followed by people involved in the day-to-day running of computer installations. These people, who include DP managers, systems analysts, programmers, operators and supervisors, made up 18% of the 1977 visitors. People specifically involved in the design and development of DP systems, including managers, analysts and engineers, accounted for the next 15%. Administration and finance was close behind with 14%. Education, including both teachers and students, accounted for 8% of visitors.

Consultants accounted for another 6%, and all the other categories made up a very small proportion, with production managers and engineers 2%, maintenance managers and engineers 2%, trainees 2% and purchasing staff 1%. But even that 1% represents 139 people, which means that there were, for example, over 700 consultants at Compec last year. An other 5% accounts for people who fell into other categories, or who failed to state their occupation.

That then is the profile of occupations. What industries and sectors did they represent?

Services, including bureaux, software houses, consultancies and other business services made up the largest proportion, 30%. Separately classified are scientific and professional services, making up 21% of the total. Within this subheading are people involved in educational services, representing 9% of the overall attendance; research and development, 5%; and dental and medical, 2%.

Electrical and electronic engineering makes up the next largest grouping, accounting for 8% of visitors. Another 6% were equally split between national and local government. Distributive trades accounted for 4% of visitors, public utilities, mainly electricity, made up 3%, while the chemical industries, mechanical engineering, paper, printing and publishing, transport and communications, vehicle manufacturing and aerospace each accounted for 2%. Construction, building materials, instrument engineering and metal manufacture were each represented by 1% of visitors.

So those are the business sectors primarily represented by Compec visitors. But are the people who attend the right people? Are they the people the exhibitor really wants and needs to reach?

The answer is that 40% of all visitors have at least some power in the selection of computers, and a formidable 10% have the final say. The remainder either specify computers or recommend the machine to be purchased.

The picture is very similar for peripherals, with 38% having some say and 16% making the final decision.

The visitors are less involved with buying accessories, services, OEM products and furniture. Of the total, 23% have some say in accessories and 18% some say in services.

The figure for OEM products is a little surprising when one considers the origins of Compec, but at the same time underlines how right people are to exhibit systems aimed primarily at the end user. In the OEM field, only 3% of visitors have a final say, and 15% have any influence in their selection. Even so that 3% represents over 400 people, and there are few better ways of reaching them than through Compec and the pages of Computer Weekly.

Clearly many of these people have an interest in buying more than one class of equipment: overall, 55% of people attending had some say in the purchasing of at least one type of product on offer.

The spread of companies represented by visitors is fairly predictable: last year 28% came from companies with fewer than 40 employees, and 20% came from large companies with over 1,000 employees. The prevalence of the one man-and-a-dog kind of operation in the computer industry is pointed up in the fact that 13%, a formidable 1,800 people, came from companies with fewer than 10 employees.

There are no prizes for guessing that the majority of visitors come from London and the South-East; any trade show in London attracts about three-quarters of its attendance from the same part of the country, and Compec falls neatly in line, with 74%. The Midlands provide 6%, the South-West 5% and the North-West 4% of visitors, while 4% came from overseas, mainly the Benelux countries, Eire and the US.

Compec visitors are very definitely professionals' — and the majority have taken out membership with a professional body to prove it. A resounding 70% of visitors belonged to a professional or trade body, the British Computer Society leading the way with 17% of visitors as members.

One in 10 of the visitors were members of the Institution of Electrical Engineers, underlining the keen interest shown by those directly involved with hardware.

Almost two-thirds of the people who attended Compec last year had never before visited the show. One in ten is a regular visitor.

Despite standholders' fears that, in the cramped West Centre Hotel, many stands were missed by visitors, it appears that more than three-quarters of the visitors, 77%, visited all four exhibition areas, and those who did not make the grand tour said either that they did not have time, or else that there was a specific item they wanted to see and they made straight for it.

How long do people have to get round the show? The answer seems to be between three and six hours; 78% of the sample fitted into that time-span — and since 57% of the visitors described the show as either useful or very useful (18%), and another 29% found it moderately useful, one can deduce that it is a convenient show which can be covered in a manageable time.

It appears that, in one respect at least, the Compec visitor matches the profile of the "average visitor" to any trade or technical show. He stops to talk or pick up literature at 12 stands, and at Compec spends an average of 16 minutes at each of these, if you allow him time to chat to his friends, fit in a pie and a pint, and try to find the loo.

Why do people attend Compec? The biggest single category, 32%, go for general interest and information, which ties in with the fact that many of them have no specific buying brief.

There is a very high correlation between the next most popular reason given and one of the ways people get to hear about Compec: 28% go as a result of specific invitations from exhibitors, and 27% go to see a specific product. Another 1% went because they were sent a ticket, which evens it up nicely.

People are always on the look-out for things that are genuinely new, and 23% go specifically to see new products and developments.

Only 8% go as it were cash in hand, specifically looking to place an order for something, and the rest go either to meet suppliers or to compare equipment.

The one important piece of information still missing about the "average visitor to Compec" is the kind of products he is actually interested in. Top of the list comes terminal equipment: 39% are interested in data terminals, either graphics, keyboard or intelligent, or all three.

Computers come next. Of the visitors, 35% were looking for some kind of computer, mainly small and medium scale digital machines, although somewhat surprisingly 6% wanted to see analogue computers and 4% hybrid computers. Computers were wanted for business applications by 11% of visitors, while the other areas of interest were time sharing, scientific, military, manufacturing, process control and data conversion.

It sounds as if it is well worthwhile for software houses to exhibit at shows like Compec. Almost one-third of the visitors were interested in services of some kind, and 15% were specifically seeking programming and software services.

Publications and computer leasing and rental both show up strongly, each mentioned by 10% of visitors, and 7% sought education and training information. Printers interested 28% of visitors, with daisy-wheel printers featuring strongly at 13%, while matrix printers were of interest to 14%.

Microprocessors were sought by 26% of visitors, and 23% were after VDUs. Data collection, 18%, punched card and paper tape, 15%, data communications equipment, 11%, terminal computers, 15%, and accessories and supplies, 15%, all featured in people's lists.

Finally, it turns out that it really does pay to put on a good show at the show; Modular Technology's anarchic school room was number four in the best remembered displays, those above it being DEC, HP and Tektronix. The most impressive demonstration — need it be said — was the Quest Datapad.

- In order to collect the information, Exhibition Surveys used a systematic probability sample of 898 visitors, to each of whom a questionnaire was mailed. Replies were received from 489, 55%, and it is upon these replies that the survey was based. According to statistical theory, the maximum error in figures in the range 19% to 81% is plus or minus 4½%; in the range 9% to 18% or 82% to 92%, plus or minus 3%; in the range 4% to 8%, plus or minus 2%, and in the range 1% to 3%, plus or minus 1%.

How the Davids can tackle the Goliaths

mpec started life as an :M exhibition, and iging by the number and 'iety of floppy disc drives, nters and other system mponents on show at /mpia this year, the OEM siness remains the core of mpec. But what exactly is › OEM market? Where es the OEM fit into lay's business? Can he 'vive against the might of › giants like IBM? In this icle, Keith Jones reviews › field and provides the swers to these and other estions.

E fact that the big established inframe manufacturers have : gained complete control of : booming small systems rket is thanks largely to the e-up of independent nufacturers that supply ıdreds of systems houses all ır the world with low cost ss-produced minicomputers, ipherals and terminals.

3y concentrating on mass ıducing one or a small group products the Original Equipnt Manufacturer, as he is cal-, can benefit from the same economies of scale in production that are enjoyed by the big mainframe manufacturers and can pass on the cost benefits to the systems houses that he supplies.

The OEM can also make a lot of money from supplying his product in very large volumes to a major systems manufacturer which, for one reason or another, chooses to buy in that product rather than to manufacture it. The product could be a disc drive or a printer.

But it can be very dangerous for an OEM to depend on one huge contract for the bulk of his turnover, as more than one OEM over the years has discovered to his cost when the valued customer has decided to give its business to another supplier, or make the product itself.

So it would appear to pay the OEM in the long run to put his eggs in a lot of baskets by spreading his customer base widely over dozens or even hundreds of end-user system suppliers operating in many different markets.

An OEM tends to extend his product range as well as his customer base as he grows, and one of the most significant developments over the last two or three years has been the move into peripheral manufacturing on a large scale by several of the leading minicomputer OEMs.

This trend has been encouraged, not only by a positive desire to expand but also by a need to sustain a high rate of revenue growth and profitability, as the amount that can be charged for a minicomputer falls dramatically with the plummeting cost of logic and memory chips.

Digital Equipment, for example, has been one of the world's biggest manufacturers of printer terminals for some time and is busily extending the families of disc drives and display terminals that it manufactures, while Data General is now also a major VDU and disc drive builder.

Perkin-Elmer, the firm that has owned minicomputer manufacturer Interdata for some time, bought the independent disc drive builder, Wangco, about two years ago and now has a third company that concentrates on printers and printer/terminals, so that the company can offer most of the hardware that its customers need to make up a system.

Disc drive manufacturing in-house is likely to remain confined to the biggest minicomputer firms for some time because of the machinery costs and technical expertise required, but even the smallest minicomputer companies today can make money out of assembling VDUs in-house.

This trend towards in-house manufacture among minicomputer firms has no doubt had some adverse effect on sales by specialist peripheral OEMs, especially since firms like Digital Equipment can offer extremely favourable terms to systems houses which buy all the peripherals they need from them as well as the minicomputers.

At the same time, firms like DEC are increasing their emphasis on selling complete OEM hardware packages rather than separate units, at a cost per package that works out a lot lower than the sum total of the individual units if they were purchased under separate OEM contracts.

But the market for OEM peripherals has grown so quickly that specialist manufacturers have expanded regardless of the increase in in-house production by minicomputer suppliers. The last two or three

By Keith Jones

years have seen spectacular growth by companies like daisy wheel printer manufacturer, Qume, which supplies many of the companies that sell to end users in the growing word processor market, and Shugart, the leading floppy disc drive manufacturer, which is now owned by Xerox.

In fact the latter firm, which dropped out of the mainframe business about three years ago, seems to see a great future in the OEM business, having just bought the disc manufacturing and OEM sales side of Calcomp, which gives it a more or less complete range of disc drive products. Xerox has owned Diablo, the other leading daisy wheel printer manufacturer, for several years.

One potentially huge source of business being eyed by most of the big peripheral OEMs at the moment is the market being built up by IBM for its Series 1 family of minicomputers.

Control Data, one of the world's biggest peripheral OEMs, sees so much potential in Series 1 business that it has actually set up a division concentrating purely on building peripherals for use with the IBM machines. The division introduced a fairly comprehensive family of products earlier this year called the Certainty series which includes a wide range of disc drives, printers and VDUs. The whole aim is to offer Series 1 users peripherals that are better and/or cheaper than the IBM equivalents, or which IBM itself does not offer at all.

With Series 1, IBM poses a threat to the established minicomputer manufacturers simply by way of its size and marketing might; although the signs are that Series 1 was essentially a defensive move by IBM to discourage some of its bigger mainframe customers from going to suppliers like DEC when they need minicomputers to equip distributed processing networks.

So it looks as though OEM sales to systems houses will account for a fairly small proportion of IBM's revenues for some time. They will get a significant slice of the OEM minicomputer market, but are unlikely to stop firms like DEC and Data General in their tracks.

The potentially much more serious threat to established minicomputer makers from microprocessor manufacturers is being countered by OEM products like DEC's LSI-11 and Data General's MicroNova, which can be supplied in the form of a single printed circuit board and which offer the low cost of microprocessor hardware, in addition to software compatibility with more powerful minicomputer hardware. In this way the customer is provided with a long and wide upwards migration path.

In addition, most minicomputer manufacturers can still offer their customers a much more impressive collection of operating software and language compilers than any microprocessor firm.

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However, the arrival of the microprocessor together with programmable read-only memory, PROM, has enabled the peripheral manufacturer to build exactly the same hardware into every unit, while providing the end-user marketing company, or even the end-user himself, with the capability to program the unit to suit individual requirements by "burning" the relevant instructions into the PROM.

Another vital factor that needs to be considered by any OEM when designing a product is the ease with which it can be interfaced with other manufacturers' equipment. In some areas interfacing is made relatively easy by the existence of accepted standards like the CCITT V24 interface for serial transmission and its US equivalent, RS 232.

But problems can arise in more complex interfacing areas like software drivers for peripheral devices. A systems house buying a peripheral from an OEM can sometimes find itself having to write a driver completely from scratch if one does not already exist that can be used with the operating system on the minicomputer itself.

Don't be defiled by the sales pitch

DON'T be put off by the banner at the top of my column, dear exhibitor. I am sure the last thing you want right at this moment is Compec downtime—not with all those eager exhibition visitors waiting breathlessly to see you put your wonderful equipment through its paces. My sympathy, I assure you, is heartfelt; I will have you know that I was in fact an exhibitor at last year's Compec, and got quite practised at judging which people in the crowd had £75,000 in their pocket to spend on a word processing system.

I would go so far as to call myself a veteran of computer shows. I have exhibited (computers, that is) in wind-blown tents in Uxbridge and snow-bound hotels in Chicago, and know well what one's real preoccupations are, namely, is there a bar with Real Ale, and has the young lady across the aisle doling out free copies of Wire-wrappers' Chronicle got a lunch date? And also, what lunacy is Modular Technology going to get up to this time?

Now that Compec has moved into larger premises I understand it is to be called the Ideal Computer Exhibition. Next year it will have grown so big that it will occupy most of Salisbury Plain. The people demonstrating Stonehenge will have an advantage over you—they won't be affected by power failures.

This is all very appropriate, of course, as computers are rapidly becoming consumer products. Modern, scientific marketing techniques will doubtless be brought in in no time. After all, selling computers is no different from selling toothpaste, is it? How about having nudes draped over the terminals, for a start? Free gifts? Send in so many boxtops from the packing your peripherals come in and get an obsolete 360/40, FREE!

The best thing to have, of course, is a miracle ingredient, and there's no doubt what that will shortly be. "Buy our all-new Whizzo mini-micro system with the magic ingredient 64K RAM! Be the first on your block whose computer has 64K WHAM!"

You'll ask salesmen, "Has *your machine got 64K RAM?*"

"No," they will reply hurriedly, "but it has 40-pin chips of tried and tested TTL . . . ." as you walk away shaking your head sadly over the pathetic backwardness of some firms.

The trouble is, my jests are being overtaken by events. After *all, what are "Qyx" and Qwip" if* not names of washing-up liquids?

"Mummy, why are your hands so smooth and soft?"

"Because I use a Qyx word processor."

"Auntie's are red and covered in callouses."

"Ah, *she uses a Brand IB—er,* Brand X machine. After all, Qyx is *ergonomic.* Yes friends, remember that Qyx comes from *contented designers.*"

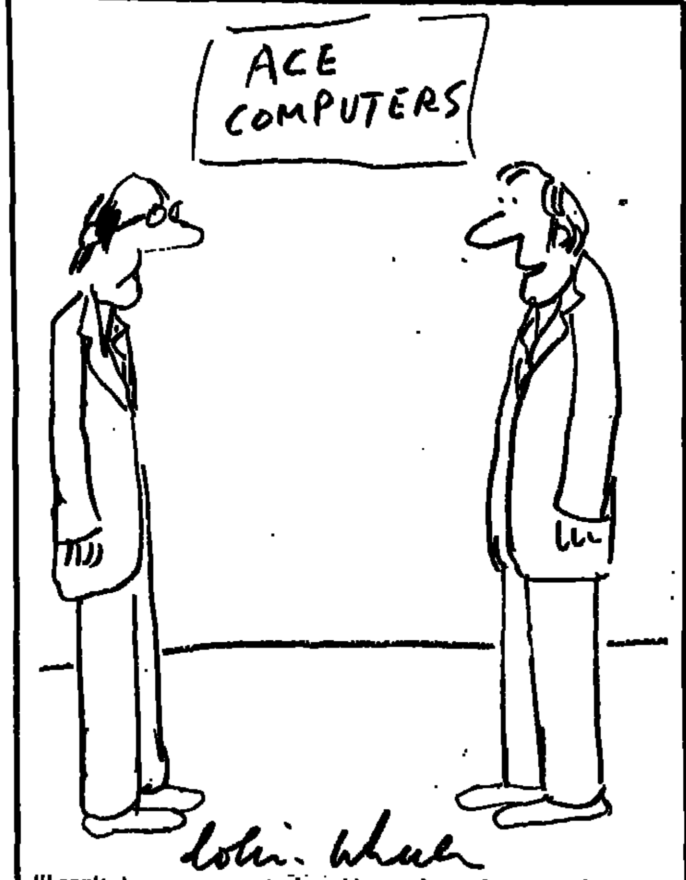
The nice thing about this sort of marketing is that what you say need bear no relation to ascertainable facts or reason. I remember when printed circuits were first introduced into consumer products, advertisements in the US for TV sets would say, "Our sets have reliability built in, because they use space-age *solid circuits.*"

Competing manufacturers would say, "Our sets have reliability built in, because they are individually wired by craftsmen—none of your mass-produced printed circuit rubbish."

The same thing is happening now with word processors. Manufacturers who have VDUs on their machines say, "Clearly it's better to have a VDU, so you can see what you're doing."

Those without VDUs say, "Clearly it's better not to have VDUs, because they distract the *typist. Besides,* VDUs give you cancer of the eyeballs."

Anyway, have a nice show, whether you are showing or looking. If you have a moment, you might try to work out an answer to the Parkinson's Law of exhibitions: no matter how many brochures they bring to the stand, they always run out.



"I can't show you any actual machines — but perhaps you'd like to see our wide range of glossy brochures?"

Up the poll...

EARLIER in this issue, my esteemed colleague Tim Palmer reports on a survey of visitors to last year's Compec, but it turns out that no one approached in a private straw poll of my colleagues gave any of the reasons for going mentioned in the survey.

For example, Donald Kennett cannot even remember why he went, but thinks it was because he likes the atmosphere of exhibitions, which he says he invariably tours with his mouth open. Peter Hewitt only went because he was about to join Computer Weekly and felt it might be useful. "I looked for a daisy-wheel printer, but I could not find one," he says.

Rory Johnston went because he was told to by his employer, and Keith Jones went because he had written the preview for Computer Weekly.

As for myself, I went because it was there. Which seems to prove my point. I didn't get where I am today by not knowing that opinion polls are a load of rubbish.

A very little knowledge

THERE still seems to be a tremendous amount of work to be done in educating the lay public as to what the microcomputer is, and more importantly isn't.

By now the majority of people have a vague conception of what "THE CHIP" is, and we seem to be moving rapidly from the no-knowledge environment to the "little knowledge is a dangerous thing" environment.

For example, at the opening of a computer store recently, the proprietors invited the local Press to attend. On the morning of the opening, one of the Press persons rang to say, "Let me get this right, are you running a computer dating service?"

"No," says a secretary, "we are selling microcomputer systems."

"Ah," says the Pressman, "you mean those new-fangled washing machines and cookers."

You could say he was getting warm.

COMPEC

It's packing Olympia to the galleries—and still growing

REGARDLESS of what we say here, regardless of what people may think about exhibitions in general, one thing is certain about Compec 78 even before it opens next week: the show will be a resounding success.

From small beginnings, Compec has come of age. It is now unrivalled as the one major annual UK computer industry show. It has outgrown the West Centre Hotel, the Wembley Conference Centre; the not altogether happy deviation down to Brighton, when bomb scares and disrupted railway schedules threatened to wreck the show, is forgotten.

Olympia is now the only exhibition centre in London big enough to take it, and even the National Hall will be packed to the galleries with a bigger and more comprehensive array than ever before of peripheral and small computer hardware.

Compec has undoubtedly picked up additional business from the decision of the US Department of Commerce to close the US Trade Centre. US companies are clamouring for space because without the US Trade Centre there is really nowhere else to go.

But successful exhibitions have an internal dynamism which propels them forward, dictates their inexorable growth and metamorphosis.

From the start, Compec was a good idea. An intimate show where industry professionals could meet each other, companies seeking OEM hardware could meet companies in business to supply their needs.

As shows go, it is popular with exhibitors, because unlike the block-busting continental jamborees led by Hanover and Sicob, it is all over in three days — and as any harassed standholder at Sicob will tell you, all the really important business is done in the first three days.

Compec is a show for professionals, defiantly so. Those who exhibit can be sure that, while any really serious student can get into the hall, there is no threat of hordes of bored schoolchildren invading the stands, devouring expensive literature like locusts.

Compec's runaway success is certainly due in part of the lack of any really large and well-established UK computer exhibition. That at least is the way it has been up to now.

But a computer show which includes equipment as large as the Documation 3000 printer, as powerful as the new Harris minicomputers, as esoteric as the latest offering in the personal computing field, as futuristic as the new viewdata terminals and as vital as the latest communications products from companies like EMI Technology can hardly be regarded as "small" any more.

It is beginning to look as if Compec will outgrow even Olympia's National Hall within a year or two, will soon be lending its voice to the clamour for a really comprehensive modern exhibition centre on an international scale for London. With all the derelict dockland crying out for redevelopment it is frustrating that there still appears to be nobody with the courage to take the plunge.

Readers will be starting to wonder how any exhibition which threatens to outgrow Olympia can continue to be described as "small." This scepticism is justified. For the truth is that Compec remains small only in conception. What will become abundantly clear by the time doors close at Olympia on Thursday night next week is that in Compec, the UK does at last have a major annual computer exhibition whch can stand comparison with the best in the world.

Like that shining example of a successful and enterprising business, Digital Equipment Corp, now a billion dollar company, Compec will be seen as the exhibition which grew big by thinking small.

Trapeze acts and tight-rope walking

A USERS' guide to Compec is long overdue. The snag of course is that it would have to be upgraded annually if only to keep pace with expansion and location.

Recently Compec seems to have been competing with the Philips Data Train in the number of locations visited. Last year's cramped Wembley Centre has given way to Olympia which is perhaps better noted for Xmas circuses and spectaculars.

Trapeze acts and tight-rope walking will no doubt be in existence on day one of Compec. "It will be all right on the day" may be a maxim of show business. But stand exhibits are seldom up and running on time. Most of the running in evidence is that of salesmen and engineers going round in circles.

For those interested in behind-the-scenes working, a visit on day one is recommended. The resources of many exhibitors are only too visible. Managing directors offer advice to the clustered engineers, while trying to avoid the freshly painted stand barriers. Pausing only to grimace at passing photographers, industry VIPs and stray journalists, the stand executives have little enthusiasm for potential customers.

Visiting DPMs could well take note of the reasons given for the non-operation gear. Top of the Compec charts is blaming the Post Office for late delivery of suitable modems. Next comes the environment. "You can't expect even an oscilloscope to function in this heat and dust." Misplaced components come next in the league backed by "confusion in the German or Swiss head offices."

For the enthusiast, day one is not to be recommended. Computer print portraits, biorhythm plot charts and battleship war game applications may not be fully operational. The opportunity should rather be taken to evaluate the respective merits of the freely disposed plastic bags, badges and 1979 calendar cards.

When this particular activity palls, attention can be turned to an appraisal of the demonstration girls. In the past, Racal-Milgo and Semaphore Computer Systems have scored notable points. Compec is not the arena for watching IBM slogging it out with competitors.

Rather it is the occasion when IBM competitors joust between themselves. Storage Technology and Memorex, while happy to be plug-compatible with IBM, would in no way wish to share plugs, compatible or otherwise.

A return to the installation base complete with ample supplies of pamphlets, brochures and fact sheets is almost obligatory. The success of the outing almost depends on the volume of take-away info. A transient dumping ground is therefore essential to the devoted visitor.

For devotees of computing sciences, a visit on day two is the best bet. Analysts and programmers can be overheard asking rather apprehensive sales personnel whether their system multitasks on a remote standalone processing basis and incorporates RJE emulators?

Day three is the relaxing one. Equipment and sales teams are all functioning. The only stand worries are whether all the sales enquiries can be followed up before next year's Compec.

Meanwhile the Compec organisers are having to face facts. Microprocessing may be the current rage. But computer exhibitions come very definitely jumbo sized.

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Who goes to the big show—and why?

A survey of the nature of some of the 14,000-plus visitors to last year's Compec reveals some interesting, and occasionally surprising, data on the needs, background, concerns and views of those for whom the big show is designed. TIM PALMER reports.

THE bald statistics show that 14,349 people visited Compec last year. As a statistic it is of limited interest. Who were those 14,349 people who filled in registration tickets? Why did they visit Compec? What were they looking for? Who are you, the visitor, likely to bump into at the show? Who among the visitors is likely to be seeking out the stand of you, the exhibitor?

Those are the important questions to which people interested in the exhibition want answers.

Fortunately, answers are available. Last year, Compec's organisers, Iliffe Promotions, called in a market research company, Exhibition Surveys to find out exactly what kind of person does go to Compec. The firm prepared a report based on replies from 489 people who visited the show, and it makes very interesting reading.

The largest proportion of the total, 19%, are in research and development, and they are followed by people involved in the day-to-day running of computer installations. These people, who include DP managers, systems analysts, programmers, operators and supervisors, made up 18% of the 1977 visitors. People specifically involved in the design and development of DP systems, including managers, analysts and engineers, accounted for the next 15%. Administration and finance was close behind with 14%. Education, including both teachers and students, accounted for 8% of visitors.

Consultants accounted for another 6%, and all the other categories made up a very small proportion, with production managers and engineers 2%, maintenance managers and engineers 2%, trainees 2% and purchasing staff 1%. But even that 1% represents 139 people, which means that there were, for example, over 700 consultants at Compec last year. Another 5% accounts for people who fell into other categories, or who failed to state their occupation.

That then is the profile of occupations. What industries and sectors did they represent?

Services, including bureaux, software houses, consultancies and other business services made up the largest proportion, 30%. Separately classified are scientific and professional services, making up 21% of the total. Within this subheading are people involved in educational services, representing 9% of the overall attendance; research and development, 5%; and dental and medical, 2%.

Electrical and electronic engineering makes up the next largest grouping, accounting for 8% of visitors. Another 6% were equally split between national and local government. Distributive trades accounted for 4% of visitors, public utilities, mainly electricity, made up 3%, while the chemical industries, mechanical engineering, paper, printing and publishing, transport and communications, vehicle manufacturing and aerospace each accounted for 2%. Construction, building materials, instrument engineering and metal manufacture were each represented by 1% of visitors.

So those are the business sectors primarily represented by Compec visitors. But are the people who attend the right people? Are they the people the exhibitor really wants and needs to reach?

The answer is that 40% of all visitors have at least some power in the selection of computers, and a formidable 19% have the final say. The remainder either specify computers or recommend the machine to be purchased.

The picture is very similar for peripherals, with 38% having some say and 16% making the final decision.

The visitors are less involved with buying accessories, services, OEM products and furniture. Of the total, 23% have some say in accessories and 18% some say in services.

The figure for OEM products is a little surprising when one considers the origins of Compec, but at the same time underlines how right people are to exhibit systems almost primarily at the end user. In the OEM field, only 3% of visitors have a final say, and 15% have any influence in their selection. Even so that 3% represents over 400 people, and there are few better ways of reaching them than through Compec and the pages of Computer Weekly.

Clearly many of these people have an interest in buying more than one class of equipment: overall, 55% of people attending had some say in the purchasing of at least one type of product on offer.

The spread of companies represented by visitors is fairly predictable: last year 28% came from companies with fewer than 50 employees, and 20% came from large companies with over 1,000 employees. The prevalence of the one-man-and-a-dog kind of operation in the computer industry is pointed up in the fact that 13%, a formidable 1,800 people, came from companies with fewer than 10 employees.

There are no prizes for guessing that the majority of visitors come from London and the South-East; any trade show in London attracts about three-quarters of its attendance from the same part of the country, and Compec falls neatly in line, with 74%. The Midlands provide 6%, the South-West 5% and the North-West 4% of visitors, while 4% came from overseas, mainly the Benelux countries, Eire and the US.

Compec visitors are very definitely professionals — and the majority have taken out membership with a professional body to prove it. A resounding 76% of visitors belonged to a professional or trade body, the British Computer Society leading the way with 17% of visitors as members.

One in 10 of the visitors were members of the Institution of Electrical Engineers, underlining the keen interest shown by those directly involved with hardware.

Almost two-thirds of the people who attended Compec last year had never before visited the show. One in ten is a regular visitor.

Despite standholders' fears that, in the cramped West Centre Hotel, many stands were missed by visitors, it appears that more than three-quarters of the visitors, 77%, visited all four exhibition areas, and those who did not make the grand tour said either that they did not have time, or else that there was a specific item they wanted to see and they made straight for it.

How long do people have to get round the show? The answer seems to be between three and six hours; 78% of the sample fitted into that time-span — and since 57% of the visitors described the show as either useful or very useful (18%), and another 29% found it moderately useful, one can deduce that it is a convenient show which can be covered in a manageable time.

It appears that, in one respect at least, the Compec visitor matches the profile of the "average visitor" to any trade or technical show. He stops to talk or pick up literature at 12 stands, and at Compec spends an average of 16 minutes at each of these, if you allow him time to chat to his friends, fit in a pie and a pint, and try to find the loo.

Why do people attend Compec? The biggest single category, 32%, go for general interest and information, which ties in with the fact that many of them have no specific buying brief.

There is a very high correlation between the next most popular reason given and one of the ways people get to hear about Compec: 28% go as a result of specific invitations from exhibitors, and 27% go to see a specific product. Another 1% went because they were sent a ticket, which evens it up nicely.

People are always on the look-out for things that are genuinely new, and 23% go specifically to see new products and developments.

Only 8% go as it were cash in hand, specifically looking to place an order for something, and the rest go either to meet suppliers or to compare equipment.

The one important piece of information still missing about the "average visitor to Compec" is the kind of products he is actually interested in. Top of the list comes terminal equipment: 39% are interested in data terminals, either graphics, keyboard or intelligent, or all three.

Computers come next. Of the visitors, 35% were looking for some kind of computer, mainly small and medium scale digital machines, although somewhat surprisingly 6% wanted to see analogue computers and 4% hybrid computers. Computers were wanted for business applications by 11% of visitors, while the other areas of interest were time sharing, scientific, military, manufacturing, process control and data conversion.

It sounds as if it is well worthwhile for software houses to exhibit at shows like Compec. Almost one-third of the visitors were interested in services of some kind, and 15% were specifically seeking programming and software services.

Publications and computer leasing and rental both show up strongly, each mentioned by 10% of visitors, and 7% sought education and training information. Printers interested 28% of visitors, with daisy-wheel printers featuring strongly at 13%, while matrix printers were of interest to 14%.

Microprocessors were sought by 26% of visitors, and 23% were after VDUs. Data collection, 18%, punched card and paper tape, 15%, data communications equipment, 11%, terminal computers, 15%, and accessories and supplies, 15%, all featured in people's lists.

Finally, it turns out that it really does pay to put on a good show at the show; Modular Technology's anarchic school room was number four in the best remembered displays, those above it being DEC, HP and Tektronix. The most impressive demonstration — need it be said — was the Quest Datapad.

- In order to collect the information, Exhibition Surveys used a systematic probability sample of 898 visitors, to each of whom a questionnaire was mailed. Replies were received from 489, 55%, and it is upon these replies that the survey was based. According to statistical theory, the maximum error in figures in the range 19% to 81% is plus or minus 4½%; in the range 9% to 18% or 82% to 92%, plus or minus 3%; in the range 4% to 8%, plus or minus 2%, and in the range 1% to 3%, plus or minus 1%.

COMPEC OEM

How the Davids can tackle the Goliaths

Compec started life as an OEM exhibition, and judging by the number and variety of floppy disc drives, printers and other system components on show at Olympia this year, the OEM business remains the core of Compec. But what exactly is the OEM market? Where does the OEM fit into today's business? Can he survive against the might of the giants like IBM? In this article, Keith Jones reviews the field and provides the answers to these and other questions.

THE fact that the big established mainframe manufacturers have not gained complete control of the booming small systems market is thanks largely to the line-up of independent manufacturers that supply hundreds of systems houses all over the world with low cost mass-produced minicomputers, peripherals and terminals.

By concentrating on mass producing one or a small group of products the Original Equipment Manufacturer, as he is called, can benefit from the same economies of scale in production that are enjoyed by the big mainframe manufacturers and can pass on the cost benefits to the systems houses that he supplies.

The OEM can also make a lot of money from supplying his product in very large volumes to a major systems manufacturer which, for one reason or another, chooses to buy in that product rather than to manufacture it. The product could be a disc drive or a printer.

But it can be very dangerous for an OEM to depend on one huge contract for the bulk of his turnover, as more than one OEM over the years has discovered to his cost when the valued customer has decided to give its business to another supplier, or make the product itself.

So it would appear to pay the OEM in the long run to put his eggs in a lot of baskets by spreading his customer base widely over dozens or even hundreds of end-user system suppliers operating in many different markets.

An OEM tends to extend his product range as well as his customer base as he grows, and one of the most significant developments over the last two or three years has been the move into peripheral manufacturing on a large scale by several of the leading minicomputer OEMs.

This trend has been encouraged, not only by a positive desire to expand but also by a need to sustain a high rate of revenue growth and profitability, as the amount that can be charged for a minicomputer falls dramatically with the plummeting cost of logic and memory chips.

Digital Equipment, for example, has been one of the world's biggest manufacturers of printer terminals for some time and is busily extending the families of disc drives and display terminals that it manufactures, while Data General is now also a major VDU and disc drive builder.

Perkin-Elmer, the firm that has owned minicomputer manufacturer Interdata for some time, bought the independent disc drive builder, Wangco, about two years ago and now has a third company that concentrates on printers and printer/terminals, so that the company can offer most of the hardware that its customers need to make up a system.

Disc drive manufacturing in-house is likely to remain confined to the biggest minicomputer firms for some time because of the machinery costs and technical expertise required, but even the smallest minicomputer companies today can make money out of assembling VDUs in-house.

This trend towards in-house manufacture among minicomputer firms has no doubt had some adverse effect on sales by specialist peripheral OEMs, especially since firms like Digital Equipment can offer extremely favourable terms to systems houses which buy all the peripherals they need from them as well as the minicomputers.

At the same time, firms like DEC are increasing their emphasis on selling complete OEM hardware packages rather than separate units, at a cost per package that works out a lot lower than the sum total of the individual units if they were purchased under separate OEM contracts.

But the market for OEM peripherals has grown so quickly that specialist manufacturers have expanded regardless of the increase in in-house production by minicomputer suppliers. The last two or three years have seen spectacular growth by companies like daisy wheel printer manufacturer, Qume, which supplies many of the companies that sell to end users in the growing word processor market, and Shugart, the leading floppy disc drive manufacturer, which is now owned by Xerox.

By Keith Jones

In fact the latter firm, which dropped out of the mainframe business about three years ago, seems to see a great future in the OEM business, having just bought the disc manufacturing and OEM sales side of Calcomp, which gives it a more or less complete range of disc drive products. Xerox has owned Diablo, the other leading daisy wheel printer manufacturer, for several years.

One potentially huge source of business being eyed by most of the big peripheral OEMs at the moment is the market being built up by IBM for its Series 1 family of minicomputers.

Control Data, one of the world's biggest peripheral OEMs, sees so much potential in Series 1 business that it has actually set up a division concentrating purely on building peripherals for use with the IBM machines. The division introduced a fairly comprehensive family of products earlier this year called the Certainty series which includes a wide range of disc drives, printers and VDUs. The whole aim is to offer Series 1 users peripherals that are better and/or cheaper than the IBM equivalents, or which IBM itself does not offer at all.

With Series 1, IBM poses a threat to the established minicomputer manufacturers simply by way of its size and marketing might, although the signs are that Series 1 was essentially a defensive move by IBM to discourage some of its bigger mainframe customers from going to suppliers like DEC when they need minicomputers to equip distributed processing networks.

So it looks as though OEM sales to systems houses will account for a fairly small proportion of IBM's revenues for some time. They will get a significant slice of the OEM minicomputer market, but are unlikely to stop firms like DEC and Data General in their tracks.

The potentially much more serious threat to established minicomputer makers from microprocessor manufacturers is being countered by OEM products like DEC's LSI-11 and Data General's MicroNova, which can be supplied in the form of a single printed circuit board and which offer the low cost of microprocessor hardware, in addition to software compatibility with more powerful minicomputer hardware. In this way the customer is provided with a long and wide upwards migration path.

In addition, most minicomputer manufacturers can still offer their customers a much more impressive collection of operating software and language compilers than any microprocessor firm.

Nevertheless, products like Intel's 8086, a 16-bit machine on a single chip, which was announced earlier this year, must act as a warning to minicomputer manufacturers that at least the lower end of the market they operate in is far from safe.

At the same time, the microprocessor as a product component is proving enormously useful to peripheral OEMs in enabling them to extend the capabilities of their products, and also to customise them at relatively low cost.

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by Chad

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Competing manufacturers would say, "Our sets have reliability built in, because they are individually wired by craftsmen—none of your mass-produced printed circuit rubbish."

The same thing is happening now with word processors. Manufacturers who have VDUs on their machines say, "Clearly it's better to have a VDU, so you can see what you're doing."

Those without VDUs say, "Clearly it's better not to have VDUs, because they distract the typist. Besides, VDUs give you cancer of the eyeballs."

Anyway, have a nice show, whether you are showing or looking. If you have a moment, you might try to work out an answer to the Parkinson's Law of exhibitions: no matter how many brochures they bring to the stand, they always run out.

"I can't show you any actual machines — but perhaps you'd like to see our wide range of glossy brochures?"

Up the poll...

EARLIER in this issue, my esteemed colleague Tim Palmer reports on a survey of visitors to last year's Compec, but it turns out that no one approached in a private straw poll of my colleagues gave any of the reasons for going mentioned in the survey.

For example, Donald Kennett cannot even remember why he went, but thinks it was because he likes the atmosphere of exhibitions, which he says he invariably tours with his mouth open. Peter Hewitt only went because he was about to join Computer Weekly and felt it might be useful. "I looked for a daisy-wheel printer, but I could not find one," he says.

Rory Johnston went because he was told to by his employer, and Keith Jones went because he had written the preview for Computer Weekly.

As for myself, I went because it was there. Which seems to prove my point. I didn't get where I am today by not knowing that opinion polls are a load of rubbish.

A very little knowledge

THERE still seems to be a tremendous amount of work to be done in educating the lay public as to what the microcomputer is, and more importantly isn't.

By now the majority of people have a vague conception of what "THE CHIP" is, and we seem to be moving rapidly from the no-knowledge environment to the "little knowledge is a dangerous thing" environment.

For example, at the opening of a computer store recently, the proprietors invited the local Press to attend. On the morning of the opening, one of the Press persons rang to say, "Let me get this right, are you running a computer dating service?"

"No," says a secretary, "we are selling microcomputer systems."

"Ah," says the Pressman, "you mean those new-fangled washing machines and cookers."

You could say he was getting warm.

COMPEC SOFTWARE FILE

Excellent chance to assess significant micro developments

A MAJOR turn-out by suppliers of microprocessor software at this year's Compec would give evidence, were it needed, of the many significant developments in this area over the last twelve months.

With many of the companies exhibiting at Compec for the first time, the show will be an excellent opportunity to assess several new systems. Principal themes which emerge include the appearance of powerful Cobol systems, a profusion of commercial applications packages, and dramatically falling software costs.

Among those demonstrating Cobol will be Micro Focus. It will have a version of CIS Cobol running under the CP/M operating system on a Z80. Priced at £400, this compiler is poised to enter what is effectively a mass market for CP/M software; an estimated 20,000 copies of the operating system have already been sold.

Micro Focus will also be demonstrating CIS-Cobol on Intel's Intellec II development system and a number of application packages written in CIS-Cobol, including a mailing list system, financial packages, and two packages for word processing.

Software Architects has taken advantage of Zilog's own business Cobol (released earlier this year) to develop a general-purpose business package called Salzoe. The software (Software Architects Ltd Zilog Order Entry) runs on Zilog MCZ microcomputers under the RIO operating system.

Salzoe currently includes order entry and invoicing modules; a compatible sales ledger system is to be demonstrated at Compec. Scheduled for delivery next year are purchase ledger and analysis subsystems, which are likely to be followed by stock control, job costing, and nominal ledger components.

All the software is designed on a conversational transaction-processing basis using menus, and the cost for a typical application is quoted as around £1,200.

As a result of recent OEM contracts CAP's MicroCobol is likely to appear on at least four company stands in addition to that manned by CAP MicroSoft. The portable software will be shown running under the Business Operating System on equipment incorporating Z80, Intel 8080, and DEC LSI/11 processors.

CAP MicroSoft itself will be showing MicroCobol on an ADDS System 70 for the first time in public. The system will be shown running applications packages including sales ledger, purchase ledger, and the company's Autoclerk.

CAP will also be demonstrating the newly-announced viewdata programming system, Telesoftware. A local processor connected to a TV screen will be used to download programs from the Prestel computer and subsequently execute them with the communications link disabled.

The local computer will also be used to access Prestel pages directly, without navigating the tree structure in which pages are stored.

A Bill of Materials Processor (Bomp) package for Intel 8080-based microcomputers could be one of the systems displayed by CPU Computers, of Woking. Announced earlier this year at a price of £500, it can be combined with the company's Inventory Management package to create a complete stock management system.

The software is likely to be shown on the firm's own 8080-based system, the M-One.

Finally, a very wide range of both system software and application packages will be on show from The Byte Shop, and its sister company, Computer Aided Systems.

Word-processing, stock control, accounting, and time recording systems are among those that will be available, all of which will run on most popular micro systems. Prices range from £100 to about £500 for a complete accounting suite.

The company can also supply Cobol, Basic, and Fortran processors for a wide range of equipment.

The Byte Shop will also have one of the "scoops" of the show, with the first European demonstration of DEC's VT100 intelligent terminal, which is based on an LSI/11 processor.

Terminals TP monitor from Telecomputing

THE Oxford-based firm of Telecomputing will be demonstrating its TPS teleprocessing monitor at Compec. Operable on ICL 2903/4 and 1900 systems, the software will be running on the firm's 2904 at Oxford and will be accessed via terminals on the stand.

Users of TPS now number around 150 worldwide, and the monitor has been adopted as standard by ICL for 2903/2904 installations.

Telecomputing's presence is equally directed at demonstrating the range of Australian-built terminals that it began marketing earlier this year.

Microprocessor-based, these include an ICL 7181 replacement which will be shown running in stand-alone mode.

The company is also expecting to show a new terminal from the range that features built-in floppy diskettes. A feature of this demonstration will be software developed by the firm for forms-handling using floppy diskette.

products are popping up all over

Totally transparent PDP 11 compatibles are the centre of attraction on stand 17b and 16c at COMPEC'78

PDP 11 Compatibility, price [illegible] performance, reliability, delivery and (with the [illegible] of the new [illegible] storage module drives) total software transparency [illegible] for Fungus Computer Products' enormous success over the past twelve months. [illegible] Fungus Sales and Service personnel have a thorough understanding of the PDP [illegible] and the technical considerations necessary [illegible] Customers among industry [illegible] university and Government [illegible] the benefit of the equipment [illegible] support services.

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- Field supported from eight service centres in Leeds, London, Manchester, Bristol, Wolverhampton, Newcastle, Leicester and Glasgow
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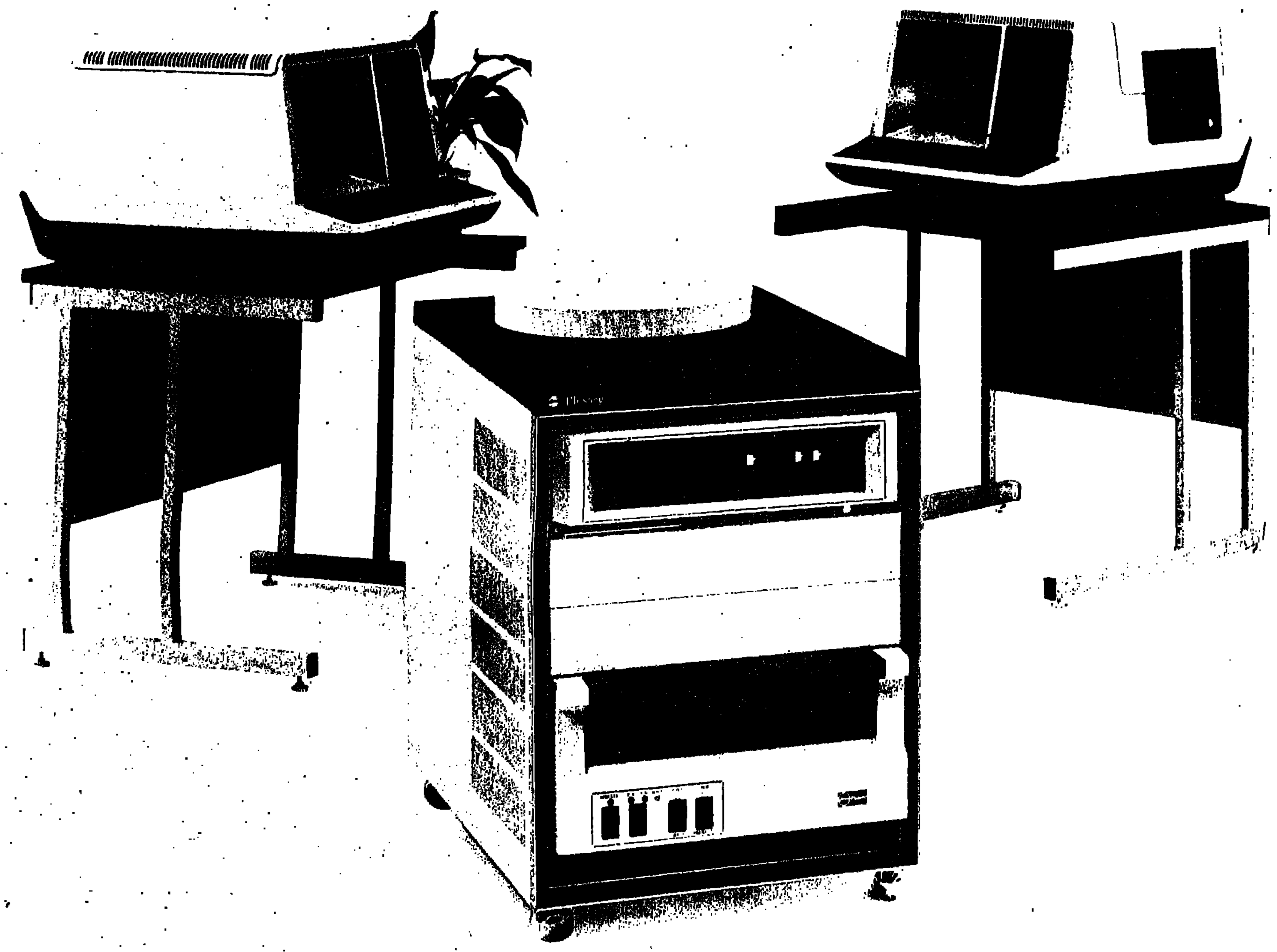

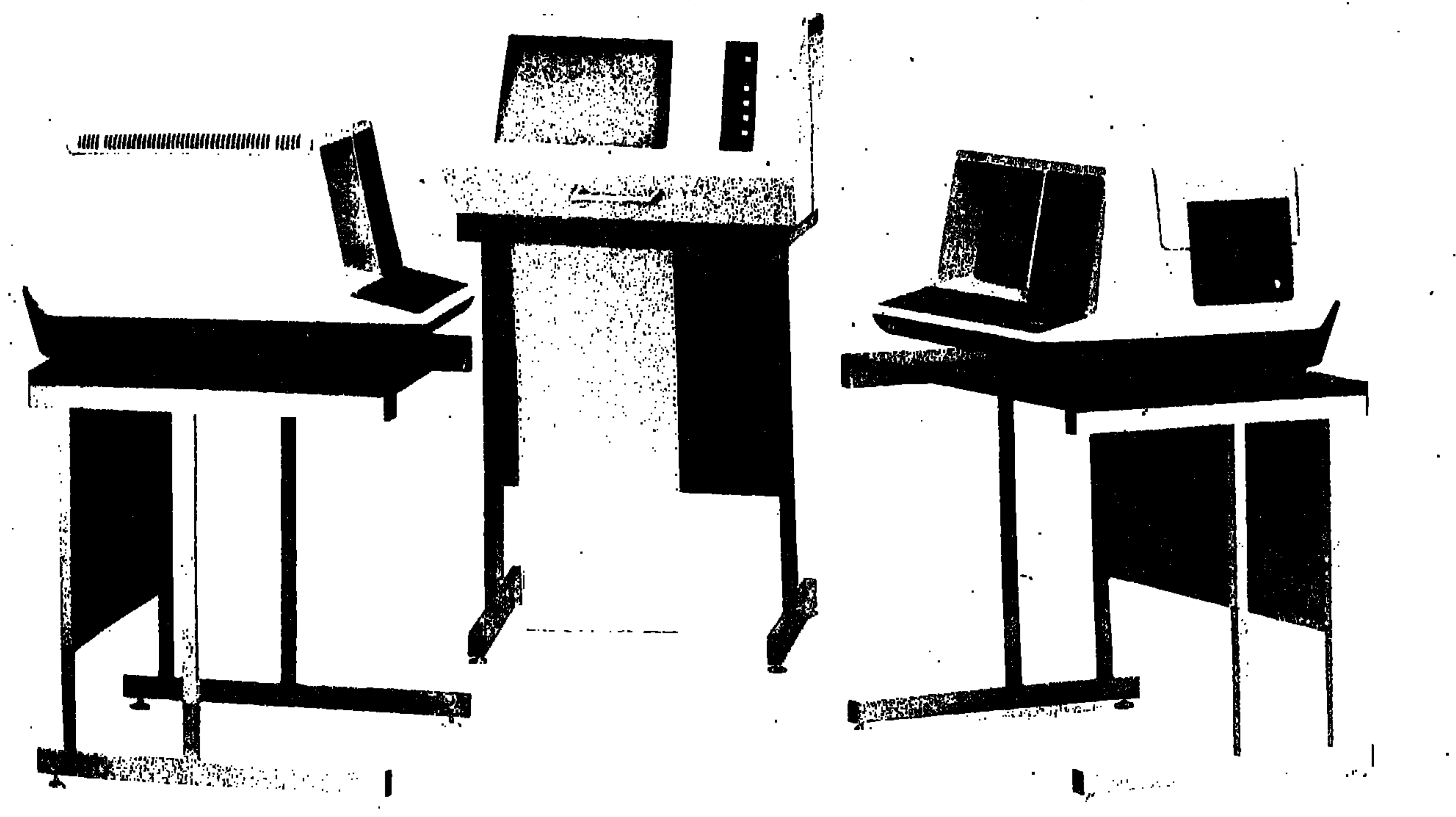

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So that anything you can do on a 320 Series system, you can do faster and for less with Plessey. And add a few things that their system can't do at all.

Product enhancements like this have made us the largest independent supplier of LSI-11, PDP-8 and PDP-11 compatible peripherals and systems. We're the only real alternative for all your mini-computer needs, a complete single source.

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COMPEC MICRONEWS

By Martin Banks

Another step on the way to a MicroCompec

IT is strange to think of Compec as a potential micro-electronics or personal computer show, but in many ways that is what it is likely to be. For in among the wide ranges of peripheral systems that will be on show, from high speed line printers to paper shredders, there will be considerable representation of the powers of microelectronics and small computers.

In many ways, Compec will be even more representative of these abilities than more specialised events, for at the exhibition they will be on show in context, often as an integral part of something else. It will be one of the best examples of the growing "grey area" that is developing between what might have once been considered traditional market divisions.

Whereas in past years the design of the electronics for a chain printer would have borne little resemblance to that required for a paper shredder, today they are both controlled by a microprocessor — and not uncommonly, the same type of microprocessor.

The growth of this "grey area" is evident from the fact that semiconductor manufacturers, the companies responsible for developing the microprocessors, are themselves going to be exhibitors at Compec.

As it is a systems oriented show, one would be right in thinking that there would be little scope in demonstrating chips and things, and to a large extent that will be the case.

Pretty Pets all in a row are becoming a familiar sight at exhibitions as more and more companies find ways to add value to the basic low-cost Commodore desk-top computer. It features on a number of stands at Compec, notably those of Commodore itself and of Plessey.

What they will be showing are systems. They have crept into the market via the back door, through having to produce hardware and software development systems for their devices. These, when they are not being used for their prime function, can be made far more cost-effective to the user by doing other work as well. An example is the Intel Series II development system used by Micro Focus as the demonstration tool for its CIS Cobol language for small business use.

Further evidence will be on hand through the presence of the genuine personal computer manufacturers and distributors — if such a thing as a definable "personal computer" now exists.

Though the systems they will have on show were aimed originally at the individual, the archtypal "hobbyist", the growth in power that is the continuing trademark of microelectronic development has stretched those systems far beyond the original concepts, and twisted system hardware costings out of all recognition.

Many data processing professionals must start getting interested in even these systems, when a computer offering 48K bytes of main memory and one or two Megabytes of secondary storage, together with virtually any type of interface desired, comes on to the market at under £4,000.

This power that microelectronics offers is perhaps even better seen in one particular system that will be on show at Compec.

This is the Nascom 1 system, which will be tucked into a corner of Mostek's stand (it is Mostek's version of the Zilog Z80 microprocessor that is at the heart of the beast).

This, with all due respect to the manufacturers, Nascom Microcomputers, was conceived as a kit that would be about as small as possible and still be definable as a computer. At under £200 for the basic kit it was aimed straight at the hobbyist market. To a large degree that was the market it found.

But where else has it gone? With the addition of expansion facilities for further I/O interfacing and additonal memory, it is now finding a ready market in industry and business.

Admittedly, it is still a kit, so some skill is required in wielding a soldering iron to actually put a working system together. But the manufacturers reckon that, with the necessary skill, a system with comparable power to the Commodore Pet Computer can be constructed for around £400.

A product on show itself, the Pet is another example of how a system conceived for one market has found considerable application in another. Indeed, the Pet is used far more in business and industry than in the home.

The capabilities of microelectronics, first demonstrated in the "hobby" computers of a few years ago, are now appearing in increasing strength in what were the traditional peripheral products. Though this move by the peripheral manufacturers may have started originally because designing and manufacturing with advanced components such as microprocessors made their task easier and lower in cost, the increased scope has not been lost on them.

No longer are all peripheral products just the eyes and ears of a computer system. Many of these products can now offer a life of their own, and provide the user with a wider variety of options to choose from. This is perhaps the best example of the "grey area" established by microelectronics, and it will be by far the biggest sector of the industry on show at Compec.

One of the largest sub-sectors is perhaps the smart terminal, which is becoming so all-pervading in computer usage that some companies now make a virtue out of selling "dumb" ones.

By taking the same ability, exploited by the hobby computer makers, to use a microprocessor as a CPU rather than just as a logic controller, together with some memory and I/O facilities, the terminal manufacturers have greatly enhanced the capabilities of their products.

Initially, the memory was used as a buffer storage system, so that work could be entered, checked and edited on the screen before being passed to the computer system at high speed. Likewise, data could be received from the computer in the same way, to be displayed on the screen at a more leisurely pace. The prime aim was to reduce the usage of the CPU, freeing it for other work.

But using the micro as a CPU, however, has now offered the chance to add remote processing to remote storage. This goes well beyond the editing function alone, by adding the ability to use the terminal for actual data processing work remote from the main computer system. This need only be accessed if the results of the remote computation need to be passed onward, or if the work is beyond the powers of the remote system.

While offering DP professionals a far wider choice, the increasing use of microelectronics has greatly added to the complication of choosing the right hardware to fit any particular systems requirement. It has also spread this range of choice to a far wider potential marketplace than was previously conceivable.

Both big and small companies now have before them a range of options through which a requirement can be met. For the smaller user, the choice is admittedly smaller, tending to range between a selection of competing hardware. But even here, the chance to hook up one or more small computers to, perhaps, a large timesharing system, giving both small systems flexibility and large system power, is a tempting possibility.

For the large user the problem is greater. The lower cost and increasing power of microprocessor-based small systems not only adds to the range of choice, but makes actual control of that choice far more difficult. The potential of the impact of small computers on data processing has already been seen by the big mainframe manufacturers. IBM for example, is moving progressively down in systems scale with its recent announcements, as the distributed processing trend gathers pace.

But even this may not be enough in many cases. In large user situations, where there are many individual departments having a call on a central computer installation's time, the chance that a department may declare UDI and buy its own hardware to meet its need is increasing rapidly.

Because the cost of suitable hardware is now within the budget of many such departments, section managers are suddenly at liberty to buy what they need — or more specifically what they feel they need — and many are now doing just that.

This has in fact lead to the rebirth of ingenuity in British industry. While the section manager has control over a budget allocation, there are still some items an accounts department will not let him buy. One such thing is a computer, for as every one knows, a computer costs a fortune.

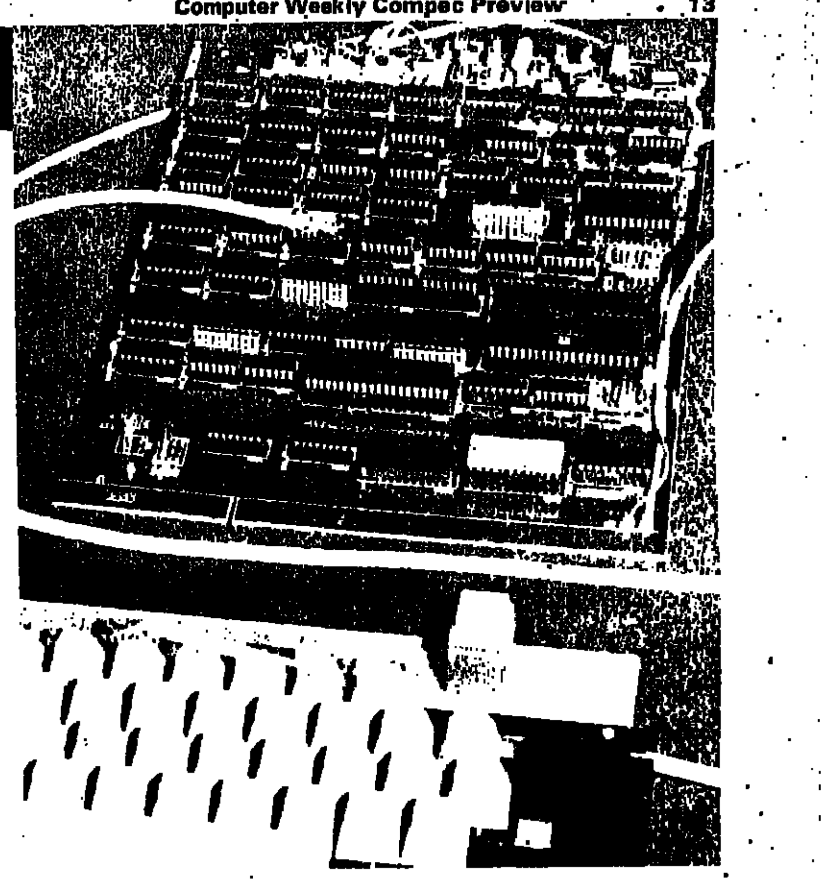
So a computer can be bought by the manager, as long as it is not "a computer"; a calculator, an accounting machine, an adding machine it can be, and the small computer business is full of such tales of such invoicing misnomers. "A computer" however, it cannot be.

This is leading to the situation in which the individual manager "tail" can start wagging the DP department "dog". UDI by managers can lead to a whole plethora of different systems and different standards, a situation that could well remove the advantages of such dispersed computing power by greatly increasing the confusion of using them together within a company framework.

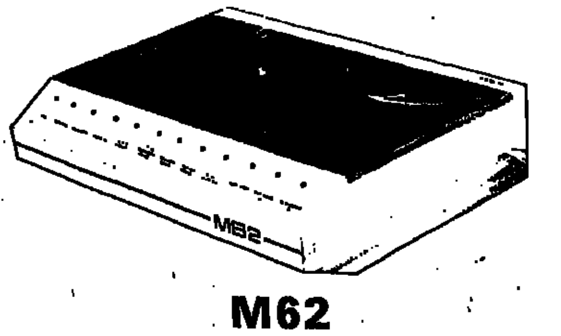
Though the "dog" may be reactionary, it needs to control the wagging "tail", but it also needs to understand why it wants to wag by itself.

Compec will be a good opportunity to get in harmony.

●



With 10,000 manufactured, 80% of them for export, since deliveries began last March, the Nascom-1 Z80-based board computer must be a strong candidate for the title of most successful ever British computer. At under £200 for the basic kit it was the first to offer full keyboard on-board TV interface and cassette interface at such a low price. It will be found on the Mostek stand at Compec.



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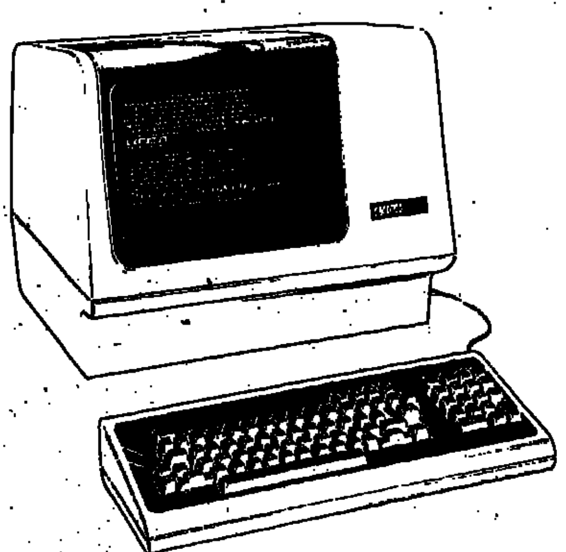
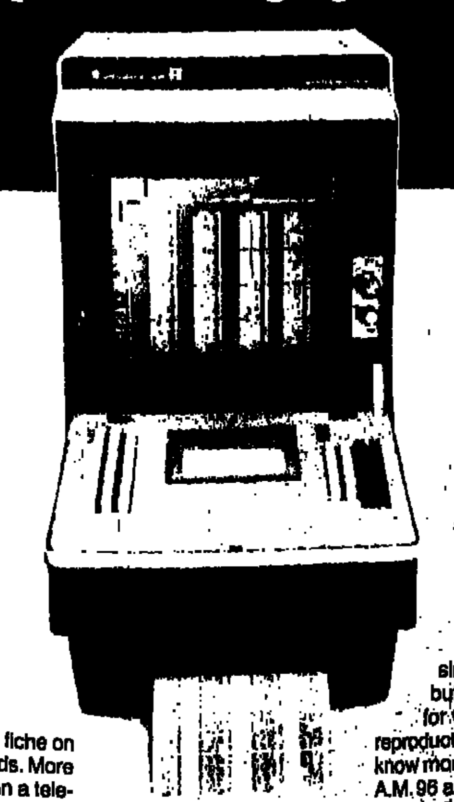


VT100



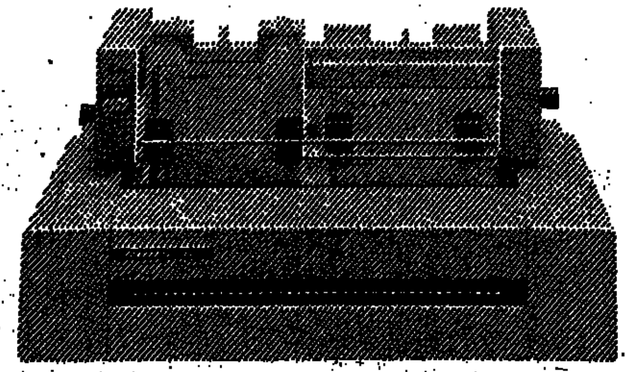


EXHIBIT A

Exhibit A is the ½ million sq.ft. of advance factory units we've built this year alone.

The units range in size from 500 sq.ft. to 100,000 sq.ft. And they have the added advantage that if you outgrow your original choice, we'll readily take the lease off your hands so that you can move into one of our larger units.

You could spend a rewarding time on Stands R18 & R20 at the COMPEC'78 exhibition, finding out all the details.

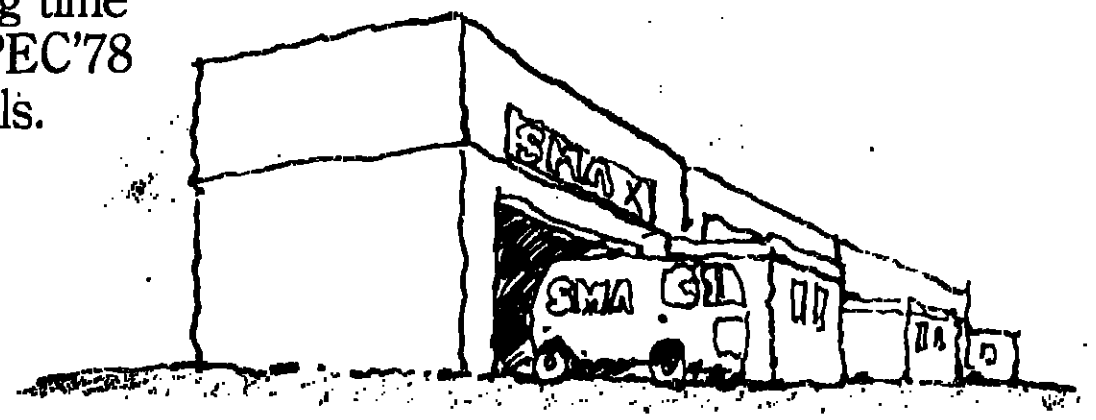


EXHIBIT B

Exhibit B is where we build them. Namely, Milton Keynes.

Milton Keynes is a unique place, combining the practicalities of urban life with the pleasures of rural life.

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MILTON KEYNES

MILTON KEYNES DEVELOPMENT CORPORATION STANDS R18 & R20 NATIONAL HALL, OLYMPIA — DECEMBER 5th, 6th & 7th

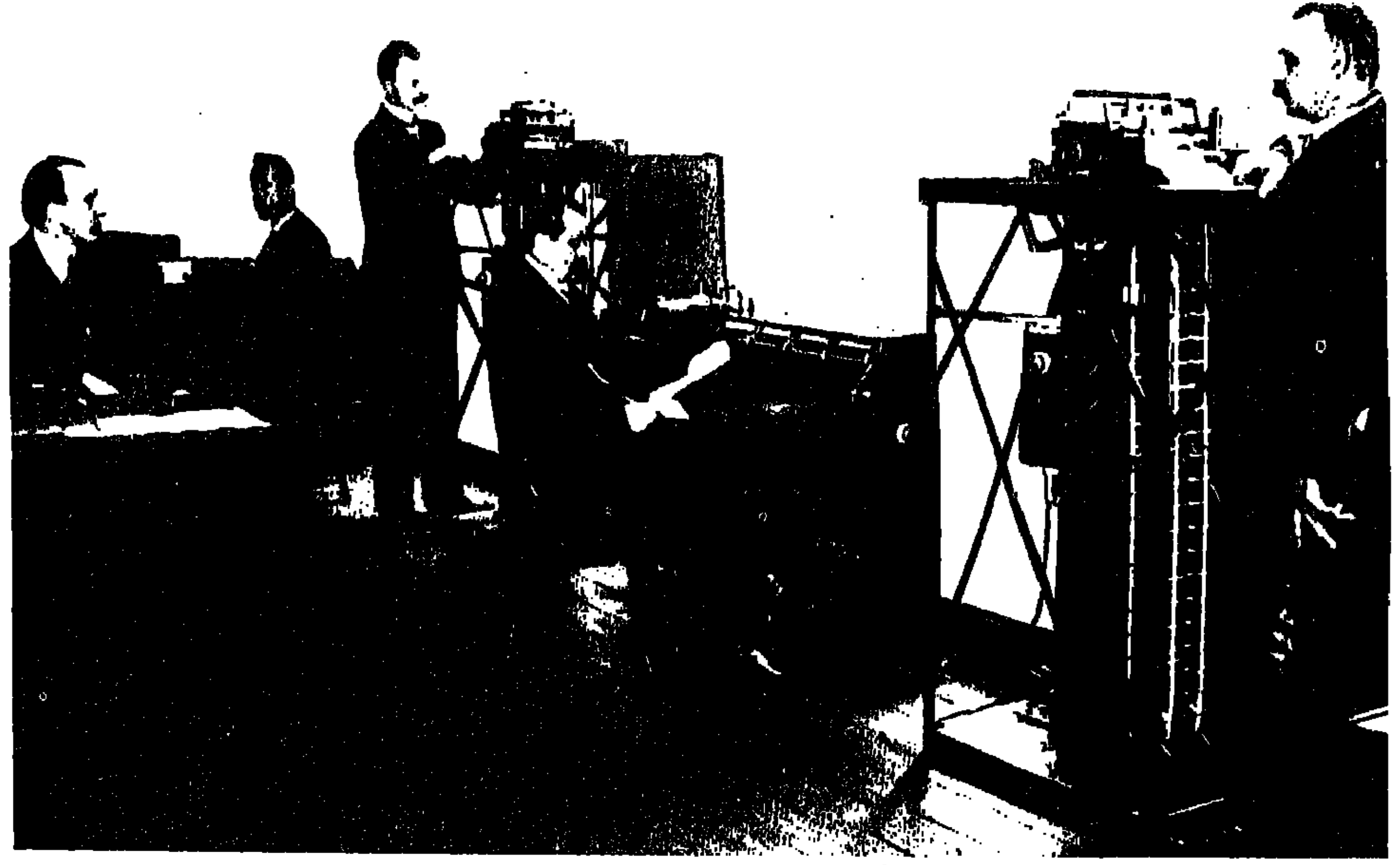
Grand Balloon Compectition

COMPEC would not be Compec without a Competition or two, and this year, Computer Weekly invites readers to succumb to the temptation to add irreverent balloons to the picture, right.

We are offering £25 for the funniest comments from one or more of the grave gentlemen in the picture, and we will also give a special prize to the first person who correctly identifies what the picture shows. There is also a £10 prize for the first correct identification of what the two lovelies below are studying.

Add your balloons to the picture, cut it out, put your name and address at the top of the page and mail it to The Editor, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU. Closing date for receipt of entries is December 12, the Editor's sense of humour is final, and employees of Computer Weekly and their families are not eligible to enter the contests.

● Martin Banks of Computer Weekly's Micro News is a judge in another Competition, this time run by Livingstone Hire, who are giving away a Commodore Pet as first prize. Check their stand for details.



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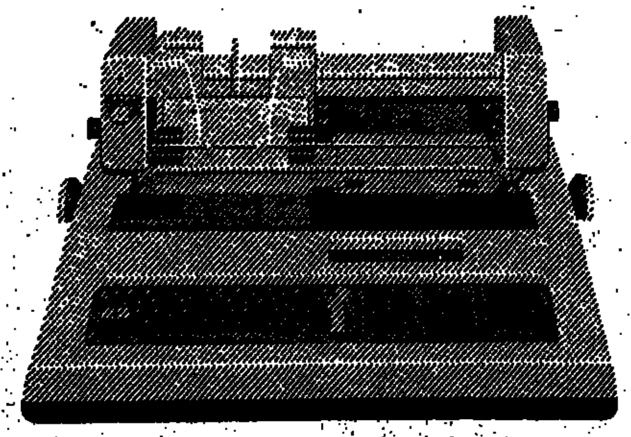
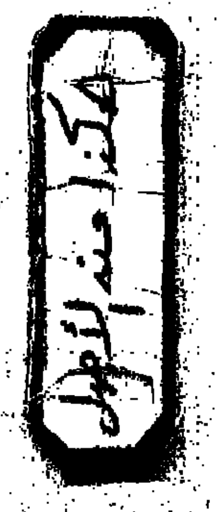
and word-processing.

HERMES DATA SYSTEM 100





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COMPEC BRIEFING

Crowded stand for the busy minimaker

Digico

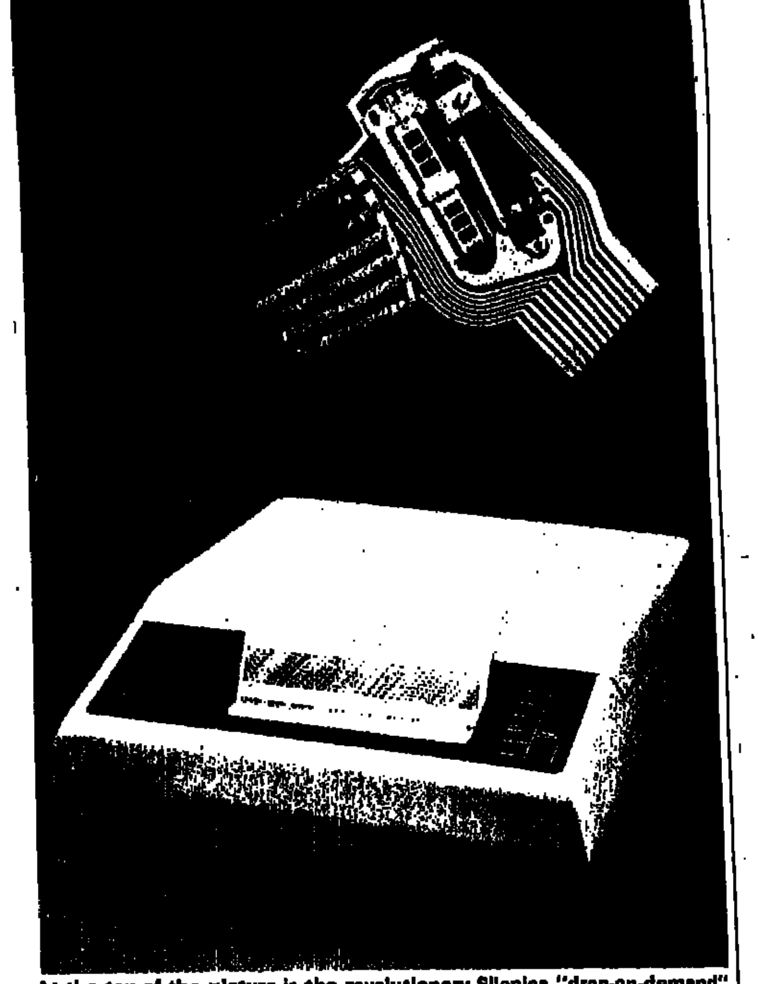
EXCITING things are happening at Digico these days, and Britain's small but long-established independent minimaker will have a crowded stand to prove it.

Several new products go on show this year, but the company's most impressive product the MTS/16E, which takes up to 270 Megabytes of backing store on disc and supports 32 simultaneous online users, is likely to garner plenty of attention.

It will be shown in a three terminal configuration, alongside the M16E mini which will be shown with the covers off.

The M16E is already a prizewinner, having been honoured with a Design Council Award this year.

However, the emphasis will be placed on the new Consort floppy-disc-backed small system. Built around a Digico processor, and offering full software compatibility with the minis offered by Digico through its 11-year history, the Consort offers a 24K-word processor, 680K bytes of floppy disc storage, Regent display, matrix printer and one high-level programming language for under £8,500.



At the top of the picture is the revolutionary Silonics "drop-on-demand" ink-jet head, described on page 23.

Tally

A COMPREHENSIVE line-up of printers ranging from 120 chps to 500 lpm is promised by Tally, and two of them are appearing for the first time anywhere.

The T3000 comb matrix printer, which runs at 300 lpm, is an enhancement of the well-established T2000. Also new is a high resolution printer with a 14 x 15 matrix for graphic scripts like Arabic and Chinese and for portraits. On offer at this, the biggest display of Tally hardware ever staged, is an acoustic cabinet which is claimed to make the T 2000 as quiet as an office typewriter.

Pritchard, Brown and Taylor

A LOW-COST point of sale system, called, logically enough, Salepoint, will be featured on the Pritchard, Brown and Taylor stand.

Salepoint is built around the Computer Automation Naked Mini and supports Datapod terminals. The system is designed for data to be stored offline during the day at the terminal, and transmitted to the central mini using the cheap-rate midnight line service offered by the Post Office.

Standard on the terminals are keyboard, LED strip display with numeric and alphanumeric characters, journal printer and receipt printer. Options comprise cash drawer, and input devices including bar-code light pens, OCR, OMR and Kimball Tag readers.

Terminals can be chained together so that only one modem and telephone connection is needed, and each terminal can store up to 260K bytes of data, including look-up tables and transaction summaries.

The terminals are polled for data from the central computer, which is programmed to produce a variety of reports for applications like stock control, sales analysis, financial analysis, credit control and productivity reports.

Other terminal functions include facilities for eight payment methods, assistant number, multiplication, up to 64 function keys and void sales. Information summaries available include assistant, payment method, VAT rate total and grand total.

COMPEC BRIEFING

Emphasis on range of options

Data General

THE Commercial Systems series of Data General minicomputers was in its infancy last Compec, but has expanded dramatically over the past 12 months.

There are now three basic expandable models in the line, starting with the CS/20, built around the MicroNova. Next up is the original member of the family, the CS/40, which has a Nova 3 processor, and top of the line is the CS/60 with an unspecified model of the Eclipse processor.

Designed for the OEM business systems builder and the large end-user with full in-house programming capability wanting to decentralise his computing, the CS line starts with a CS/20 supporting one display and backed with a 600 K-byte dual floppy drive, and expands to a 17-terminal CS/60 with 850 Megabytes on disc. The programming language offered is interactive ANSI 74 Cobol throughout the line, and programs can be transferred up the line with no conversion.

Configurations from the range will be on show at Compec, where the emphasis will be on range of options and compatibility. Linked to the systems will be selections from the wide variety of peripherals offered, which include DG Dasher printer and display terminals, 10 and 20 Megabyte cartridge drives, moving head drives ranging in capacity from 50 to 192 Megabytes, and single and dual density tape units.

Calcomp

COMPUTER graphics and Calcomp are synonymous, and the company is showing four plotters for the first time in the UK.

Claimed to be the fastest, most advanced drum plotter available, the Calcomp 1055 features four pens under program control, and offers plotting speeds up to 42 inches per second, with a resolution of 0.0005 inches and operates on or offline.

The French Sems Solar 16 mini turns up in the 930-100 graphics controller, which will be demonstrated with the 1055.

The high-speed offline 5400/VIP electrostatic plotter-printer makes its European debut at Compec and offers a resolution of 100 dots per inch.

The fourth new Calcomp product is the VIP vector processor, which accepts vector plot, raster plot or print data from multiple tapes, and carries out vector to raster conversion, offloading this task from the mainframe.

Two disc products also debut at the show. The Marksman is a 10 or 20 Megabyte fixed disc drive which uses Winchester technology, and is compatible with floppy disc power supplies. Also new from Calcomp, the Huntsman drive incorporates 16 Megabytes of fixed and up to 83 Megabytes of exchangeable storage.

The company will exhibit its range of tape drives, and the new floppy disc subsystem.

Dataplus

FROM Dataplus of Cheltenham come a new matrix printer and a new printer terminal.

The matrix printer is the Victor Model 80, running at 100 chps, printing up to 80 characters across 8½, 9½ or 9⅞ inch paper. With optional additional electronics it can accept both bit serial and parallel data.

The data terminal comes from associate company Weyfringe, which has configured the device around its 400 series printer, and uses a CY 480 single-chip microprocessor controller.

Crow

THE workaday display terminal bursts into glorious colour at Crow of Reading, specialists in high-resolution colour displays.

The latest CDCT2 Hirem 875 terminals come under the spotlight on the Crow stand. These displays feature a special shadowmask tube with approximately four times as many dots to the square inch as standard colour TV tubes. The tube can resolve up to 1,300 lines per picture horizontally, and achieves similar vertical resolution by scanning at 875 per second.

Standard and high-resolution 625 line displays will also be shown, and Crow will also feature high quality British-made Windsor monochrome displays, including one which includes two 9 inch monitors in a standard 19 inch rack mounting.

Quadeco computer-assisted colour display generators will be used in the Compec demonstrations, and Crow will also offer the Checkmate test signal generator which comes in versions for setting up both 625 and 875 line displays.

Compec through the ages

Gold medal FORTRAN VII

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PERKIN-ELMER DATA SYSTEMS

COMPEC BRIEFING

Alfaskop System 41 makes UK debut

Datasaab

AMONG the major new terminal offerings of 1978 is a cluster version of the Swedish Alfaskop, one of the best known display terminals ever, with over 25,000 installed.

The brand new Alfaskop System 41 makes its UK debut on the Datasaab stand at Compec, and one of the most noteworthy features of the cluster system is the ability to communicate simultaneously with either two similar, or (more importantly) two dissimilar mainframes. So far only IBM 3270 and Univac UTS 400 emulations are available, but others are on the way.

The processor of the System 41 is built around the Motorola 6800 micro. It has significant software aids, including the ability to run Cobol cross-compiled on a mainframe.

There is also a package called Alfaform for designing forms on the Alfaskop screen, and another, Transaction Collection Package, TCP, which allows temporary storage of data after execution of checks within Alfaform, and requires a dedicated floppy disc drive.

A variety of modules can be attached to the communication processor apart from the Alfaskop display, and each incorporates its own Motorola 6800 controller. Devices include a dual floppy disc subsystem from Control Data, a 125 lpm matrix printer from Oki, and a variety of different keyboards.

Features within the display, which is ergonomically designed to be easy on the eye, include standard yellow on brown, with optional brown on yellow.

The communications processor comes in local and remote versions, and supports up to 32 device lines. Printers, displays and floppy drives can be chained on each line. Datasaab is also developing its own Cobol for the 6800, which will avoid the need for cross-compilation. Also on the way is support for IBM's SNA and SDLC communication protocols.

Datasaab will also show the standard Alfaskop 3500 VDU at Compec.

Minicomputer Systems

NOT too many OEM systems builders get to go international, but one which has is MCS, Minicomputer Systems. It specialises in small business systems built around Data General minis.

At Compec, MCS plans to show a 128K byte Micos system with 20 Megabytes on disc, Midas II and Midas III displays and two printers. Users get a full-scale accounting package bundled with the hardware, and this will be demonstrated, together with the APT application programming package for easing the task of system development, and Factfinder, which is an information retrieval and word processing package.

X-Data

ENTERING the UK market for floppy disc drives, X-Data of Brentford has just acquired UK marketing rights to the Remex line of floppy disc drives, which includes a range of IBM-compatible devices, and a series specially designed for use with Digital Equipment PDP-11 minis.

X-Data also markets printers from Oki, and will show the CP210 document and passbook printer, adopted by ICL for its new line of banking terminals. The CP110 80 column printer and the DP100 line of 132 column matrix printers which are available in four speed variants from 125 to 300 lpm will be shown. Microprocessor-controlled, the DP100s can handle graphics, bar codes, OCR and APL.

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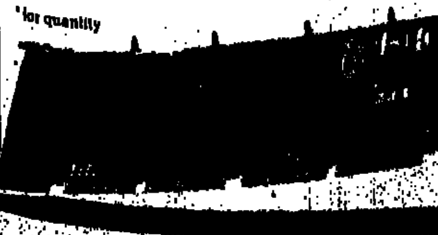

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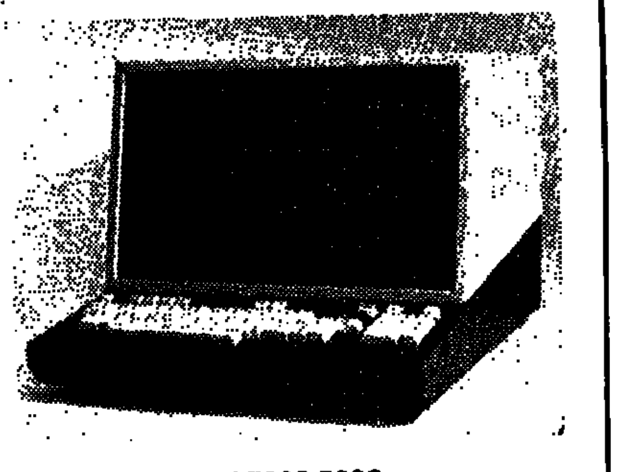

Model 7008-7009

- ★ 24 Lines of 80 Characters per line
- ★ Selectable Baud Rates from 50 to 19,200 Baud
- ★ Dual Interface—CCITT V24 and 20/60 mA Current Loop
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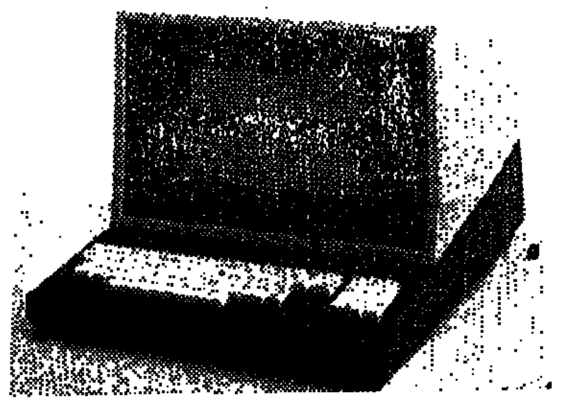
- ★ Hard Copy Printer Output
- ★ Selectable Half or Full Duplex
- ★ Video Output for External Monitors
- ★ Green Phosphor Non-glare Screen



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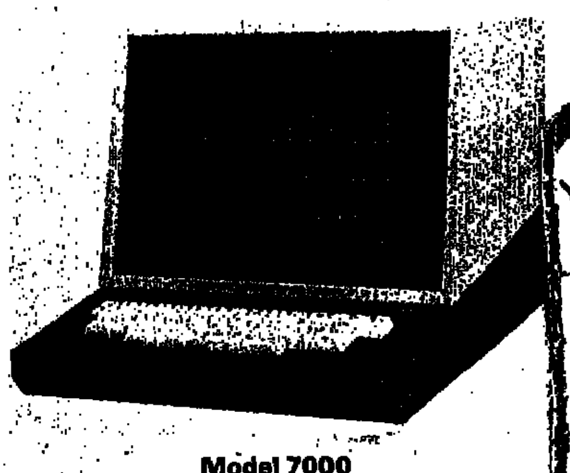

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First public showing here for Spinwriter

DRE

ATTRACTIONS on the Data Recording Equipment stand will include the first public showing in the UK of Spinwriter, a serious challenger for daisy-wheel printers. Spinwriter is built in Japan by Nippon Electric and sold throughout Europe by DRE. It employs a print-head rather like a daisy-wheel with all the "petals" pointing upwards so they are parallel with the axis of rotation rather than radial to it.

Spinwriter can run at 55 chps and comes in receive-only and keyboard send/receive versions. There are also models that are plug compatible with popular minicomputers.

DRE itself builds a wide range of impact matrix printers that operate at up to 150 chps and communicate at up to 9,600 bps. The firm will have five different models on its stand.

DRE is also one of the biggest manufacturers of minicomputer disc drives outside the US and will be presenting a variety of products at Compec, including the 3300, which provides up to 80 Megabytes of fixed media storage plus some fixed head tracks for fast access as an option. At the other end of the scale, the 3200 can hold six or 12 Megabytes on a single platter front-loading cartridge. In the floppy disc area, DRE will have the 7100 and 7200 on show. These come in single or double sided versions and can store up to 1.2 Megabytes at double density.

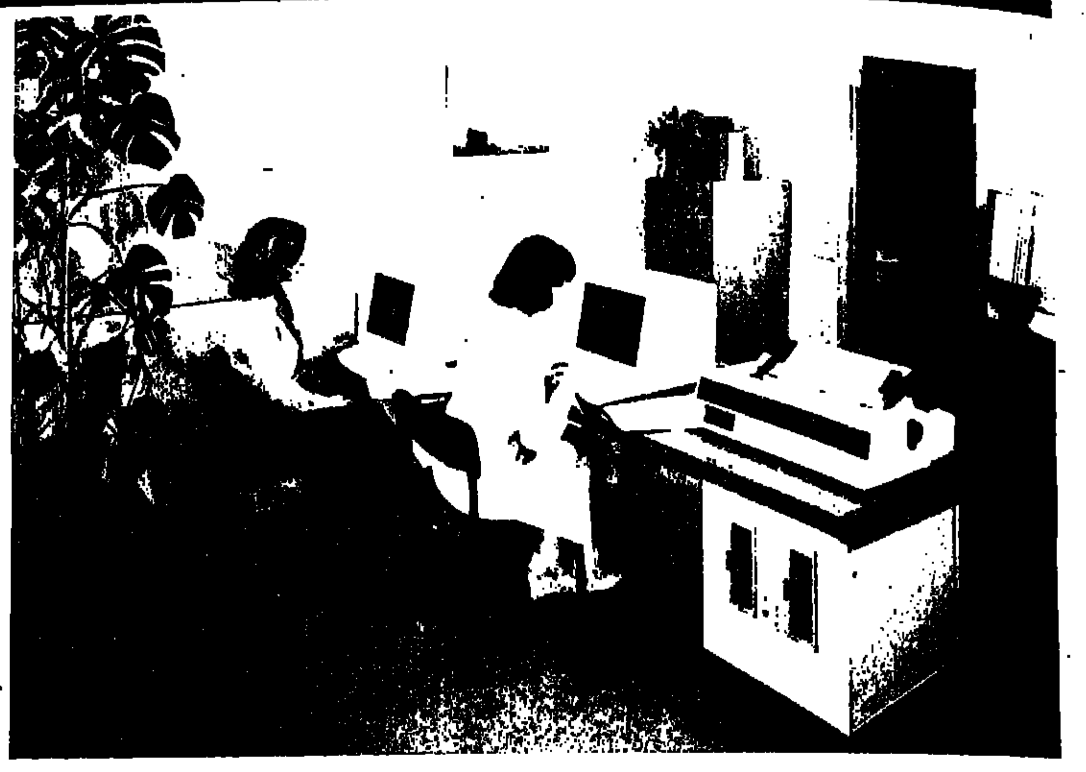
Something completely different on the DRE stand will be the Trucdata interactive terminal which enables an unskilled operator to enter data by simply pointing a fibre optic pen at light emitting diodes.

Compelec

AMONG the wide range of Altair-based configurations on show on the Compelec stand, the company will also be giving a first public showing to its own computer system, the Compelec Series 1.

This is a Zilog Z80 based machine featuring 64K bytes of dynamic RAM, 1K byte of EPROM, an AMD floating-point processor, two serial ports, one parallel port and a choice of floppy disc storage from the Shugart range of eight-inch, IBM-compatible units.

It supports the CP/M operating system, and four high-level languages will be available for it: Basic, Cobol, Pascal and Fortran IV. A multi-user, multi-tasking operating system with Basic compiler and assembler will be available shortly for the system.



The singular success of the M-ONE Intel 8080-based stock control system has encouraged CPU Computers to add a multi-terminal version. Here, under the obligatory pot-plant sentinel, it is.

Rugged plotter takes the field

Versatec

A RUGGED plotter designed to go out in the field will be the leading attraction at the Versatec stand, where the company will show its Model 3000 printer plotter for the first time.

A stand-alone device, it can be used for on-site structural engineering, road maintenance, civil engineering, surveying, construction and map-making. It produces printout and graphics on the spot direct from a VDU or from data transmitted over both high-speed data links and standard telephone lines.

The Versatec 1640 hard copy system is also lined up for Compec. It produces multiple copies from any Hewlett-Packard 2640 series terminal including the 2648 graphics terminal, and comes in two versions, one dedicated to a single terminal, the other capable of serving up to eight terminals.

At the show it will demonstrate its versatility by producing hard copy from a Lynwood VDU.

Data Maintenance

THE line-up from Data Maintenance Ltd, DML, comprises disc storage modules, magnetic tapes, floppy discs and cleaning and inspection equipment for magnetic media.

The DML 76/77 disc modules are equivalent to the CDC 876/878 model, and the company has them in stock.

The DML 656 disc pack inspector is designed to DML's specifications, and enables engineers to get a good look at the surface of the disc.

The high quality Wabash B line of cassettes designed for use with word-processing systems will be shown, alongside the Wabash floppy disc, which runs on IBM 3740 and 3540 or compatible drives. It comes in a cleaner-lined brushed vinyl jacket.

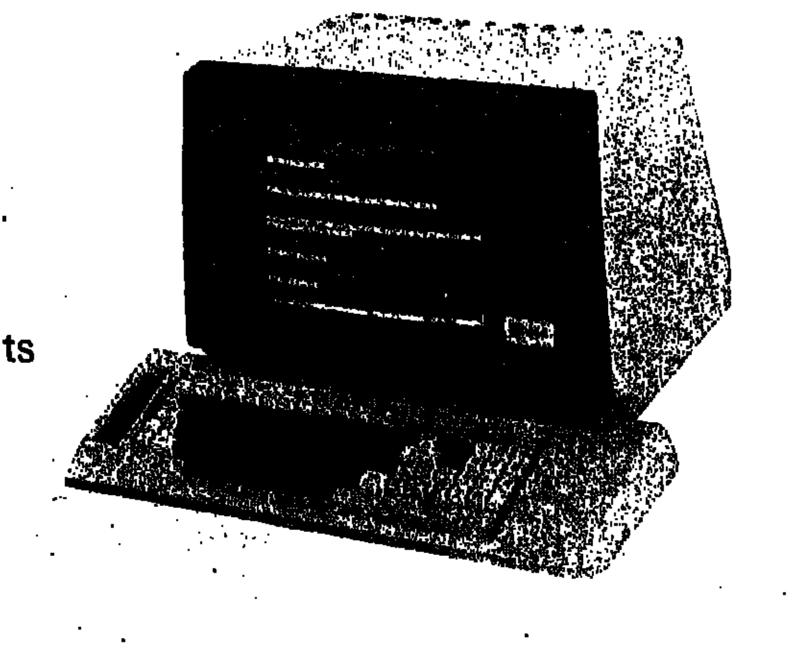
Inspectors and cleaners for both front-loading and top-loading disc cartridges will also appear on the stand.

CPU Computers

FROM CPU Computers of Woking come two significant Compec offerings: a new multi-terminal version of the M-ONE stock control system, and a new line of rigid discs from Shugart.

The M-ONE on offer at Compec will include the Intel 8080 CPU with two displays, two floppy drives, Centronics 701 printer built into a desk. The machine will demonstrate CPU's Inventory Management software package, and the price for the system, including the package, is £9,250. A standard M-ONE running the Modular Accounting package will also appear.

New from Shugart is the SA4000 series of Winchester technology disc units, which come in 14.5 and 29 Megabyte versions. Also from Shugart, CPU will show the SA850 double-sided double-density drive, the standard SA800, claimed to be the most widely used floppy drive in the world, and the SA400 double-sided double-density minifloppy drive.



Compec through the ages

Feedback Data

MAGNETIC cartridge drives, a factory data collection terminal and badge readers, all manufactured by the company in Uckfield, Sussex, will be exhibited by Feedback Data at Compec.

The TS314 units on display will be desk and rack-mounting dual drive versions. They are available in buffered and unbuffered formats, have an integral formatter and feature a variety of interface options.

The TS316, a new single drive unit, will also go on show for the first time. It has parallel write input and serial read output using twin 800-character buffers, and is packaged in a compact case.

The Feedback Data factory data collection terminal is designated the 480 and is a microprocessor-based terminal for use in an industrial environment. It includes card and badge reader, numeric or alpha-numeric keyboard and includes a 240-character display for operator guidance, file look-up and data entry verification.

Solid-state badge readers complete the line-up, the BR444 being a low-cost 13-bit reader and the BR445 a full 10 column, 10 row reader; both use credit-card sized punched badges and fibre-optic technology.

Data Efficiency

ONCE you have assembled all your shining new computer equipment, you need somewhere to mount it, store it, keep it secure.

That is where companies like Data Efficiency come in. Their stand at Compec will be bursting at the seams with VDU masks, storage racks for discs and tapes, paper tape accessories, print-out storage, safes to protect data from the effects of fire, microfiche storage and a host of other items. Something new in cleaning products and in minicomputer media is also promised.

Data Efficiency has also moved into the microcomputer business with a new division called Microsense. Formed with the intention of leading small businessmen, school teachers, laboratories and hobbyists through the maze of micro offerings, Microsense is selling the Commodore Pet and the ITT 2020 version of the Apple II together with a full business analysis and software service, and both machines will be on show at Compec.

It sounds mind-blowing, but Microsense also promises to unveil a multi-user, multi-program real-time business system for under £5,000.

Rair

SEVERAL enhancements will be on show on the Rair stand for its Black Box microcomputer system that was introduced earlier this year.

These include a double density doubled-sided disc drive with a capacity of 280K bytes per drive, plus an additional dual drive option that offers a storage capacity of over 1 MByte. The company will also be demonstrating a new high-speed floating point arithmetic unit, which is said to offer a four-fold improvement in performance on the Black Box.

Rair will also be displaying its wide range of terminal systems and products, including Hazeltine's new low-cost 1400 video display terminal.

Something out of the ordinary in processing versatility

Jacquard

AT any one time, there are a handful of computer systems in the industry which stand out as being something out of the ordinary.

One machine which definitely falls into this category is the Jacquard J100 Videocomputer.

The first surprise about the J100 is the amount of work Jacquard manages to get out of the National Semiconductor IMP-16 16-bit microprocessor.

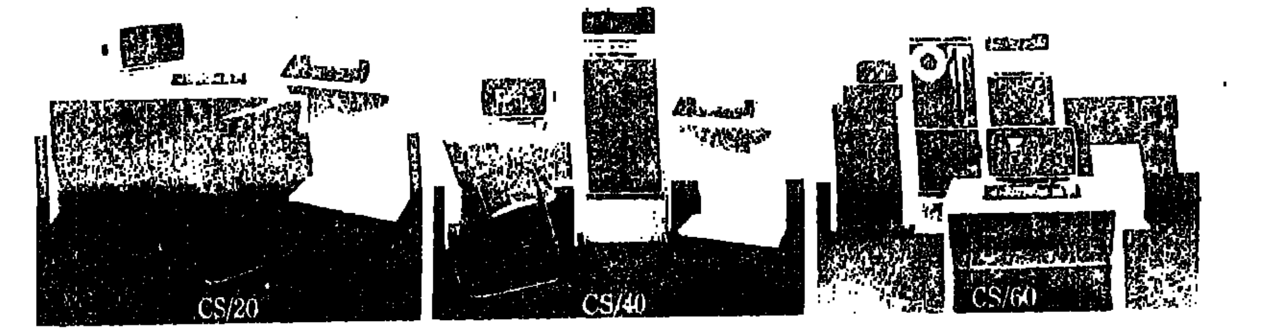
Jacquard was one of the first companies to introduce text processing software capable of running in parallel with data processing on a small business computer.

At Compec, Jacquard plans to emphasise the versatility of the J100 by demonstrating simultaneous text and data processing at different screens on the same machine, at the same time running remote communication. The processor takes up to 16 VDUs and 64K words of MOS or core memory, and up to 320 Megabytes on disc.

According to Jacquard, the Type-Rite word processing package has just won the coveted Datapro "Roll of Honour" as the best shared logic word processing system.

Compec is where the Jacquard J500 computer is to get its European debut, which represents a quantum leap forward in processing power for the company.

It features a new processor built using a Texas Instruments four-bit bit slice microprocessor, and will run all the software developed for the J100, and is offered as a desk-top unit with built-in screen and two double-density floppy disc drives.



Dramatic demonstration of impact printer speed

Documation

ONE of the most dramatic printer offerings this year will be the formidable 3,000 lpm printer from Documation. Called the DOC 3000, the printer is a substantial piece of hardware, and is believed to be the fastest impact printer available.

It is a band printer and is designed for use with IBM mainframes, in particular as a cheaper back-up printer to the IBM 3800 laser printer in applications where continuity of operation is vital.

The DOC 3000 is totally compatible with the IBM 3211/3811 and 1403/2821 printer-controllers, said Documation, and has an integrated microprocessor-driven controller to save space. The technology used involves lightweight alloy print hammers striking a revolving steel band.

Other products on offer from Documation include the DOC 1000/1200 range of medium speed line printers, and the DOC 2000, which runs at 2,000 lpm and is claimed to offer particularly good print quality.

The DOC 6250 and DOC 6501 card punch and card reader complete the line-up.

Wespac

IF your clumsy operators go around dropping disc packs all over the place, you can see at a glance if any of the packs has been jolted sufficiently to cause material damage — if you had had the foresight to fit Shockwatch damage detection devices to all the packs beforehand.

A new development, Shockwatch II goes on show at Compec, by courtesy of Wespac.

Semaphore Computing Systems

COMPEC will be the launch-pad for a new service from Semaphore Computer Systems of Godalming, best known for its Vanguard business systems built around the Univac V77 minicomputer.

The service, known as Evaluation, Service and Proposal will be available to all potential customers. Semaphore will appoint a senior analyst to do a full-scale survey of the user's requirements, and promises to produce a report written in plain English.

The report will not necessarily recommend new equipment; it could confine itself to proposing new methods and procedures. Configurations and file sizes will be specified, together with timescales, input requirements and staffing needs.

The service, needless to say, will not come free: it will cost £1,500, but this amount will be able to be used as a credit against software development costs if the customer subsequently decides to order equipment from Semaphore.

Hardware on offer from Semaphore will be the mid-range Vanguard V7640L with 64K words of memory, 20 Megabytes on disc, three screens and a serial printer.

Demonstrations will focus on stock and production control, general accounting and order processing.

Data Dynamics

DISPLAY terminals, printer terminals, cassette units and word-processors are the order of the day at Data Dynamics.

The company is keen to draw attention to its Tele-ZIP portable do-it-yourself display terminal. Data Dynamics supplies the keyboard, electronics and acoustic coupler: you find the television set or monitor and the telephone, and you are in business.

With a TV set, the terminal is simply plugged into the aerial socket; it can also be used with a monitor requiring a one volt peak-to-peak signal

Next in line is the ZIP 64, which offers a 1,024 character display on a standard 12 inch screen, takes and transmits data at up to 1,200 bps and costs under £400.

The ZIP KSR is a 30 chps 5 x 7 dot matrix printer terminal with Qwerty and Azerty keyboard options and the facility to attach a cassette tape unit.

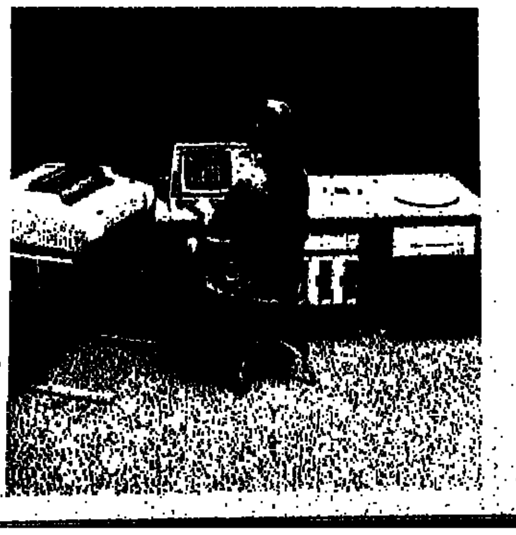
The ZIP ASR version adds a 30 chps paper tape reader and punch, while the ZIP KDP includes both printer and display in a single desk-top unit.

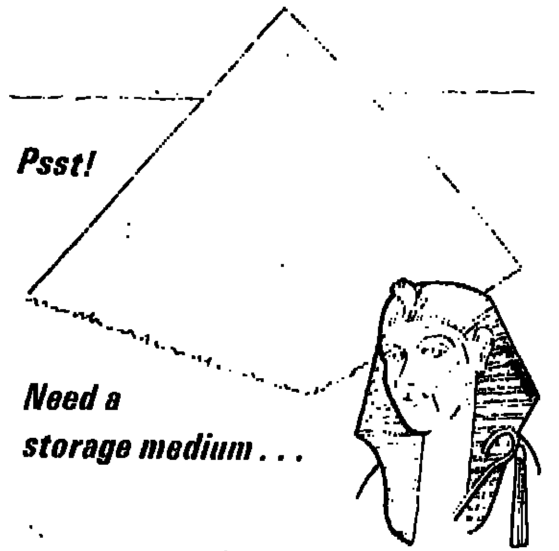
Also on offer will be a microprocessor-controlled cassette terminal from MFE. Communication is at four switch-selectable speeds up to 2,400 bps, and cassette capacity is 340,000 characters.

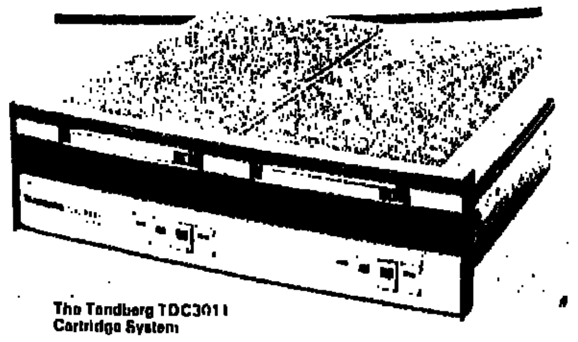
On the adjacent stand, Data Dynamics Services will show the Artec International Display 2000 word processor.

This comprises two units: a free-standing floppy disc unit and desk top daisy-wheel printer, plasma display and keyboard.

Compec through the ages







Chance to catch up with mini specialist's range

Hewlett-Packard

MAJOR new announcements in the business field have flowed thick and fast from Hewlett-Packard in 1978, and Compec provides an opportunity for those who have lost touch to catch up on developments at the world's number two minimaker.

Heading the list is the HP 300, which incorporates three Silicon on Sapphire processor chips and runs a subset of the HP Image database management system. Designed for transaction processing and capable of supporting up to 16 terminals, the HP 300 starts at under £24,000, and runs under Amigo/300, a new virtual memory operating system.

Hewlett-Packard is also showing models from its range of desk-top computers, including the System 35, which made its debut in September, and is priced at £6,485 for a full screen model with 64K bytes of main memory and magnetic tape cassette unit, programmable in either assembler or Basic.

Livingstone Hire

IF visitors to Compec wish to join the ranks of Commodore Pet owners, then the Livingstone Hire stand may well be the place to be, for the company will be running a competition during the show at which the prize will be . . . you guessed it, a Pet computer.

Livingston has recently entered the microcomputer rental field, adding this to its traditional market of hiring out electronic instruments to short-term users in industry.

It has selected two microprocessor development systems for its initial venture into this field, these being the Intel MDS 221, for which software support is provided by Sintrom Electronics, and the Motorola Exorcisor, where the software support is provided by ITT's Microprocessor Division.

Cole Electronics

STAR attraction on the Cole Electronics stand is sure to be a new speech digitiser for transmission of high-grade voice over a 2400 bps synchronous channel. Designed to enable users to make more economic use of costly transatlantic or long-distance lines, the digitiser, called the Model 100, comes from Time and Space Processing Inc of Cupertino, California.

A new full-duplex 2400 bps modem from Codex will also be featured. Called the LSI 24/24, the new device operates on two-wire dial-up or dedicated lines, and complements the existing Codex LSI range of 4800, 7200 and 9600 bps point-to-point and multipoint modems.

Other Codex products on offer from Cole will be the Multipoint Network Control System, MNCS, and the Circuit Quality Monitoring System, CQMS.

The former enables line quality to be monitored and networks to be reconfigured from the central site, while the latter is used for monitoring, testing and diagnosing faults in a network, using input from Codex LSI modems.

Cole also markets the Tab Products TAB 700 key to floppy disc system in the UK and Eire. IBM 3741-compatible, the TAB 700 can be customised to other companies' standards, and single or dual stations.

The Tab DOCS 7000 document control system, consisting of a key to floppy disc workstation plus 30 chps printer, will also be on display.

Silonics

THE ink-jet matrix printer is a new concept pioneered by Silonics in the US. The Silonics Quietype printer will be the star attraction on the System Industries stand at Compec, and incorporates an ink delivery system which Silonics calls "drop on demand", removing the need for both pumps and impact heads.

The technology of the system is the subject of a lawsuit brought by Silonics against Siemens over a printer introduced by the German company.

In 80 character per line format, the Quietype prints 180 chps, 123 lpm. In 132 characters per line, the speed is 210 chps, 90 lpm. The format is switch-selectable. A 7 x 9 dot matrix is used, and the printer is particularly suited to applications where near-silent operation is required.

People seeking to interface CDC-80 or 320 Megabyte disc drives to DEC PDP-11 minicomputers should look at Systems Industries' Midas microprocessor-driven controller, which allows up to four drives to be attached to one or two PDP-11 processors.

Compec through the ages


The Adler TA 21 is a low-cost multi-purpose data capture system making its debut on the Triumph-Adler stand.

Adler

NEW from Adler is the TA21 data capture system, which features tape cassette storage, and costs £3,300. It is a free-standing device with cassette drive, keyboard and printer, and includes facilities for OCR print-out, off-line data capture and validation. Remote communication facilities can be added for another £700.

Volumatic

MOST of us spend our working lives trying to build things up, create order out of chaos, but sometimes it is necessary to put the process in reverse.

Anybody with sensitive microfilm, microfiche, printed circuit boards, secret documents, printout, tapes or cassettes which they wish to destroy should make straight for the Volumatic stand.

Volumatic disintegrators sound fierce enough to satisfy the most violent destructive urges. They reduce material to a powder or micro-confetti which does not require incineration.

Volumatic says that the electrically-driven disintegrators destroy all types of film, paper and tape on a continuous basis without jamming. A vacuum system prevents dust, and compacts the material for convenient handling.

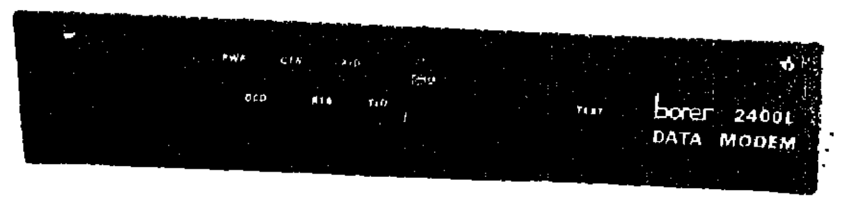
Top loading and front loading versions are available in capacities up to one ton an hour, and there is an office version which takes 10 sheets of paper or film at a time.

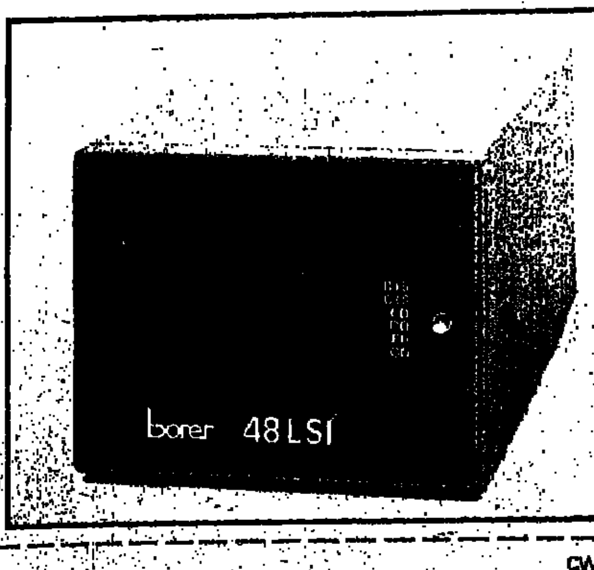
JM Factors

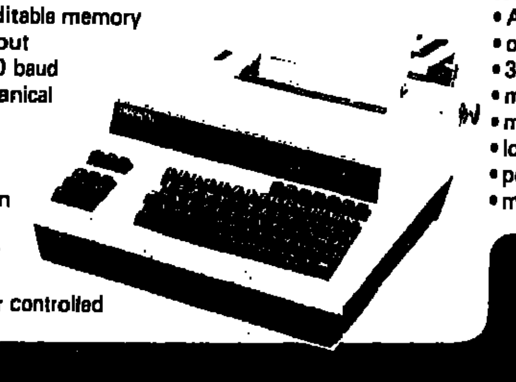
COMPUTER supplies are the speciality of J M Factors, and the company is also taking space at Compec to introduce a new disc cleaning and inspection service to the UK.

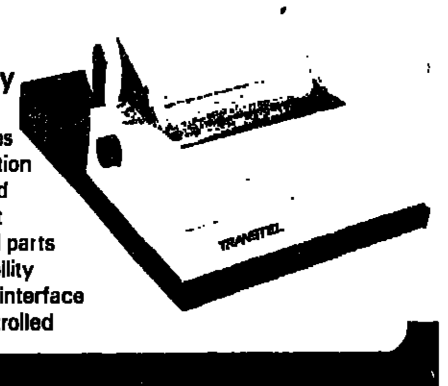
Called Randomex, the disc cleaning service takes 15 minutes per pack, and is done on-site. The service includes full decontamination plus an analysis of the condition of the recording surfaces.

J M Factors also markets a wide range of discs from Athana, including high technology and standard disc packs, disc cartridges and floppy discs. The company will show its line of TBS ribbons for high-speed printers, terminals and daisy-wheel printers, and inform visitors of the wide range of listing paper, punched cards, teleprinter rolls and other paper products in stock.









COMPEC BRIEFING

Sprint Micro 5 makes its bow

Facit

SOLE European outlet for the Qume line of daisy-wheel printers is Facit, and new from Qume this year is the Sprint Micro 5 daisy-wheel printer terminal. Driven by a Fairchild F8 microprocessor, the Sprint 5 runs at 55chps and is designed for use in any application where high-quality text printing is required.

Bi-directional matrix printing from a 9x9 head at 250 chps is offered by the Facit 4540. Black and red, elongated and underlined characters can all be accommodated in the same line.

The Facit 4530 matrix printer, which comes from Dataroyal, prints at 160 chps, and offers printing of various sized characters and bar codes on both continuous forms and pressure-sensitive labels.

Facit tape readers, punches and combined units will also be on show.

Centronics

NEW to the UK from Centronics will be the 765 high-speed asynchronous teleprinter and the 791 demand document printer.

The 765 attaches to lines up to 1200 bps and prints at over 200 chps. The 791 is a multi-part form printer for a wide variety of applications such as invoice forms and airline tickets.

The Microprinter, a small non-impact printer which uses aluminised paper, will appear alongside other Centronics 700 series matrix and 6000 series line printers.

COMPEC BRIEFING

Discounts for GEC visitors

GEC

BRAND new from GEC Computers is the 4060, a reimplementation of the basic 4000 series processor using the AMD 2901 4-bit bit-slice microprocessor. Eight 2901s are used in the CPU, which is dramatically smaller than the existing processor, fitting onto two boards instead of 15. The 4060 model has up to 128K words of semiconductor memory, the 4062 up to 512K words of core or mixed core and semiconductor, and the 4065 up to 512K words of semiconductor store.

Languages offered are RPG II, Basic, Fortran, APL, Pascal, BCPL and Algol 60, with Cobol and extended Basic, and the Total DBMS on the way.

GEC is offering special discounts to customers who discuss the machines at Compec and place orders before next March. The discounts are between £3,000 and £6,500.

●

LAST year, GEC Telecommunications exhibited a prototype of its terminal for the Post Office's Prestel viewdata service. This year the production version, called the Datacom 30, will appear. It has full alphanumeric keyboard, 12in monochrome TV display, integral modem and features automatic dialling.

CAPP-CPP

THE Intel-8080-based AIDS System 70 floppy-disc-backed display terminal has been selected by CAP-CPP to demonstrate the latest developments in MicroCobol, and the imaginative use of viewdata for software distribution. The latter facility has been dubbed Telesoftware by CAP-CPP, and should form the basis of a particularly interesting demonstration. MicroCobol software to be demonstrated on the System 70 includes a Business Operating System, development system, Autoclerk file management, sales, purchase and nominal ledger and time recording.

The System 70 has display, keyboard, up to five floppy drives, and an 8080-based processor with 40K-bytes of user memory. Communication software takes up another 8K-bytes.

BTI

ONE of the more interesting processors announced in 1978 is the Basic Timesharing BTI 5000 from BTI Computer Systems (UK) Ltd. The machine features the full instruction set of the HP 21MX mini which was used in the BTI 400, thus offering software compatibility, but with additional instructions to optimise and extend the power of the operating system with such features as string and file handling.

The base configuration comes with 30 Megabytes of disc storage, expandable to 120 Megabytes, and up to 32 communication ports are available.

Offered with OEM discounts, the BTI 5000 also has significant enhancements for reliability and maintainability. It has been designed for cooler operation than its predecessor, and the cabinet has been designed for more effective cooling with less fan noise. Temperature-sensitive power shut-down provides protection against mains transients.

Remote diagnostics are also available, enabling engineers at maintenance headquarters to check out the system to determine what spares will be required before setting out.

SEL

SYNONYMOUS with 32-bit minicomputers, Systems Engineering Laboratories is taking space at Compec to draw attention to its packaged version of the 32/77 mini, called the 32/7760. This will be shown with 128K words of main memory, 80 Megabytes on disc, a line printer, VDU, graphics terminal and graph plotter. The demonstration will feature the new Coral 66 compiler.

One of a family of packaged systems, the 32/7760 is designed for real time users wanting appropriate hardware for simulation, real time data acquisition, and scientific processing in fields such as aerospace, oil, defence, research, computer aided design and energy management.

GA

SOME extensive new network software has been developed by General Automation, and to show its capabilities in the networking field, the company will exhibit a GA 16/440 mini supporting three terminals, online to a GA 16/220 microcomputer at company headquarters in Burgess Hill, Sussex. Also on offer will be the MiniTom business system.

Wang

SOFTWARE packages for specific groups of users will be emphasised by Wang, which is planning to show T and MVP versions of its 2200 range of small business computers. Packages designed to meet the requirements of estate agents and of car dealers, developed by software houses for the Wang hardware, will be demonstrated on the stand.

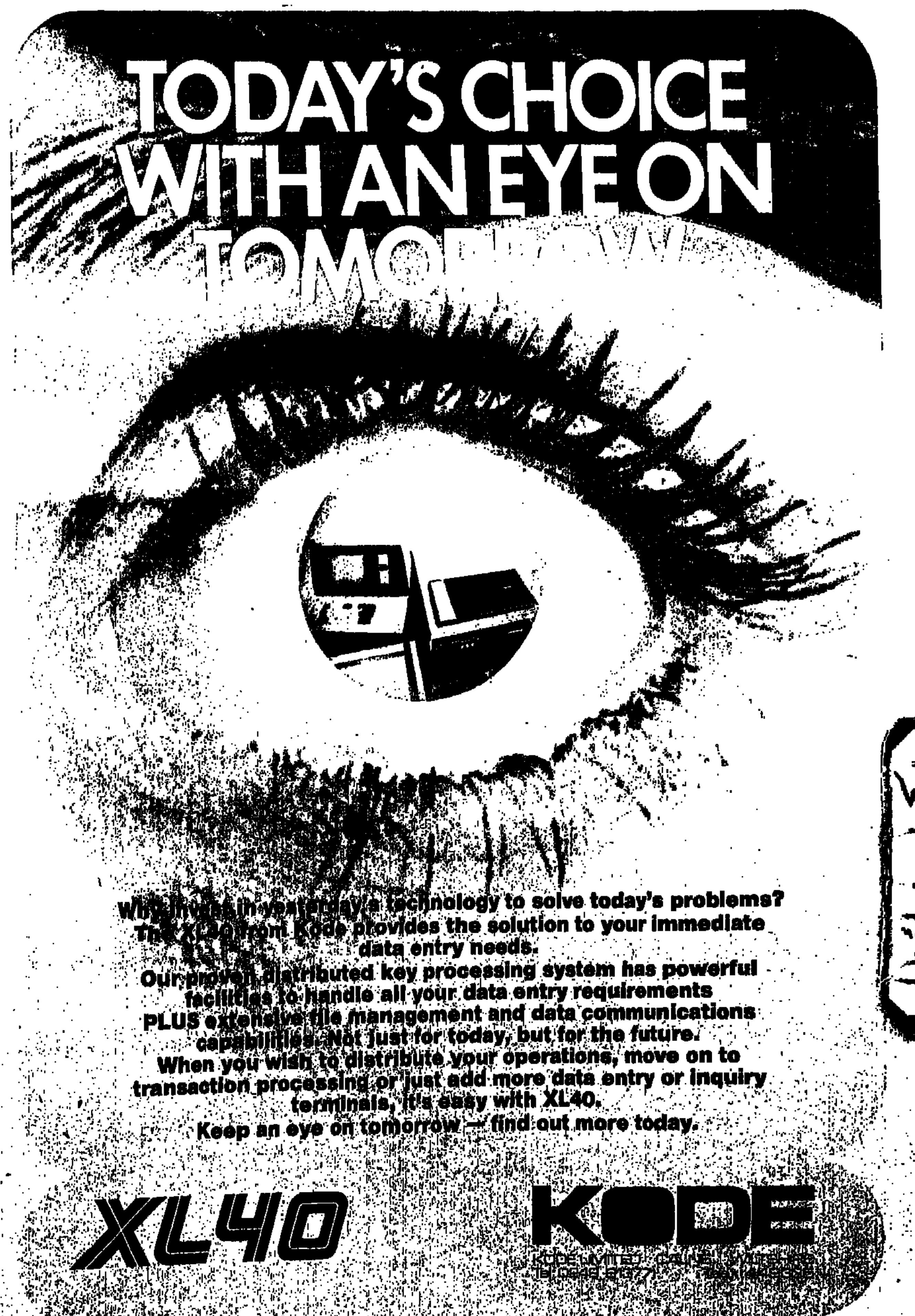
Gamma

THERE will be plenty to see and talk about at the stand of the burgeoning Gamma group of companies, but the highlight will be the general accounting and order processing software written for the DEC Datasystem.

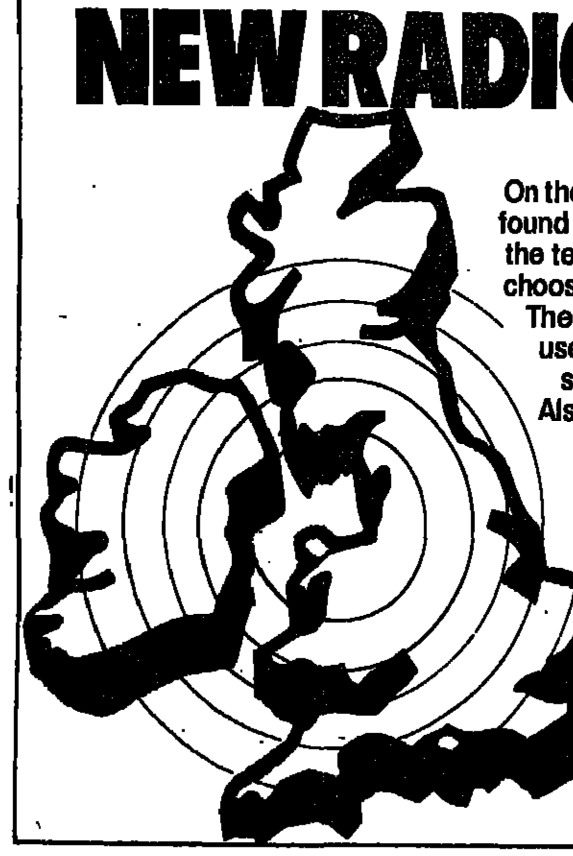
Representatives will also be on hand to discuss the Olympic range of LSI-11 based microcomputers, and several packages of specialised software including News-Key for the wholesale newsagent, Quik-Sell for retailers and wholesalers, and Prophet for modelling.

ITW Licon

A BOTTLE of wine a week for a year is the tantalising prize offered to the visitor who succeeds in keying the secret nine-digit lucky number at the stand of solid-state keyboard specialist ITW Licon of Northampton.



THE STORY BEHIND THE NEW RADIO WAVELENGTHS



On the 23rd of November many familiar radio programmes will be found at new positions on the tuning dials of our receivers. What are the technical reasons behind the changes? And why did the BBC choose the particular new wavelengths for Radios 1, 2, 3 and 4?

The November Wireless World brings you the whole story — plus useful tables listing the new wavelengths of all the UK radio stations involved.

Also in this issue: constructing a noise reducer for tape recording; an unusual design of electronic burglar alarm; a survey of laboratory "breadboards."

wireless world

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COMPEC BRIEFING

CTL at show for first time

Computer Technology

HIGHLIGHT of the year for Computer Technology was the launch of its new 8040 minicomputer. It features a redesigned CPU using bit-slice microprocessors and offers very significant price-performance improvements over the older products in the line, with which it is fully software-compatible.

Attractive features include potential for very large main memory and a 32-bit wide data bus. Software to be demonstrated on this, CTL's first appearance at Compec, includes Transation Application Driver for development of transaction processing systems, and stored information.

SET Electronics

PEOPLE frustrated at the limitations to attachment of peripherals offered by IBM 360, 370 and 3030 series controllers should make a bee-line for the SET Electronics stand.

SET has a new controller, the SET 1100, which allows users to attach up to eight communications lines, input, output or unit record devices to a standard IBM channel. At the show, the SET 1100 will be demonstrated attached to an IBM 360/30, supporting a Dataproducts 2550 1500-lpm printer and a Documation M1000 card reader.

SET says that the equivalent IBM device is twice the size, takes a maximum of four devices, and costs significantly more than the £13,000 of the SET 1100. Two different mainframes can also be attached to a separate controller, and simultaneously make use of different peripherals attached to the controller.

Zygal Dynamics

THE ultimate in daisywheel printer terminals will be on show at Compec, courtesy of Zygal Dynamics. Called the DTC 382, it has a 1,920-character display mounted above the printer giving full test editing facilities, and also features automatic proportional spacing, double striking, communications at up to 1,200 bps and graphics facilities. A more basic version, the DTC 302, is available in a receive-only version.

The middle model of three Zenter intelligent displays will also feature on the stand. Called the ZMS 70, it is a programmable desk-top unit incorporating up to 64K bytes of memory and 140K bytes of mini-floppy disc storage. Already available are an executive, a software development package with assembler, and a Basic interpreter is on the way.

The company will also offer add-on memories for DEC minis from Mostek, and the *Diablo 1620* daisywheel and *1660 matrix* printer terminals. The daisywheel device will be attached to a DataMaster floppy disc *edit*, store and forward device in a word-processing application.

Modata

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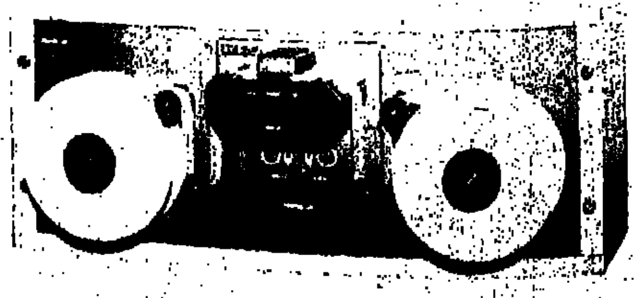

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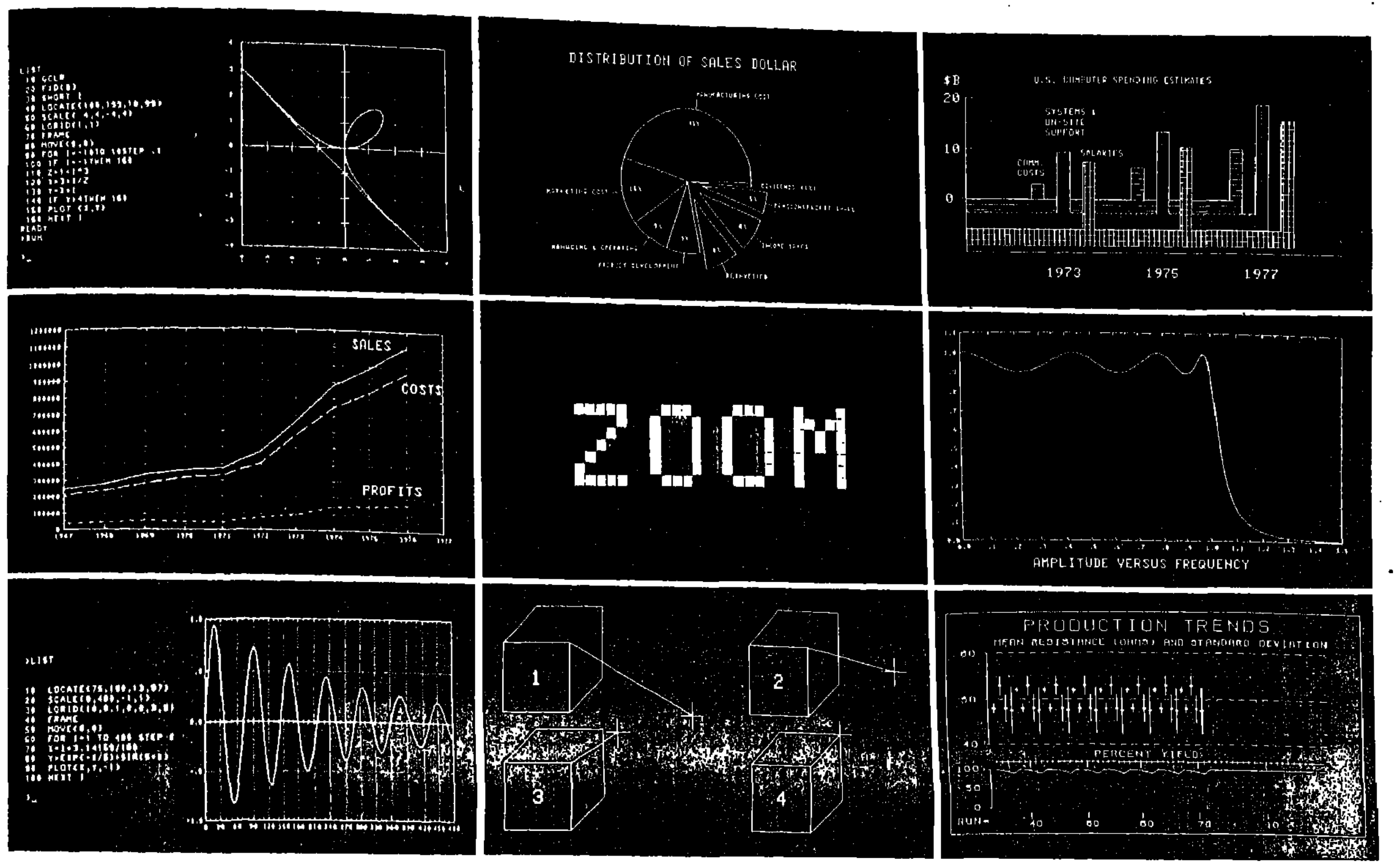


Without graphics software.

You just lost your last excuse for only using alphanumerics. Because with HP's new 2647A intelligent graphics terminal, you get graphics without digging into your CPU's software.

A picture's worth a thousand numbers.

On an alphanumeric terminal, your data's just a screen full of numbers. But with the 2647A you can plot tabular data as a bar graph, or a pie chart, or a linear or logarithmic line graph. Quickly, with just a few keystrokes.

What's more, with the 2647A you can zoom in and out and pan right, left, up or down.

Selectively erasing, shading important areas to make them stand out or using a rubber-band line to make a quick sketch can all be done without any help from your programming department.

It's more than smart.

What if your CPU's output isn't tabular? Or if you'd like to plot derived data, say a three-month moving average from monthly sales figures? Or if you need more than a bar graph, pie chart or line graph?

The 2647A's not just smart, it's intelligent.

You can program it to reformat data from your CPU, or to compute more data, in easy-to-write BASIC and you can program it in AGL, our high-level graphics language extension of BASIC. Its powerful commands, such as FRAME, AXES, LABEL, LOCATE and PLOT, put sophisticated graphics at your fingertips.

Hard copy's easy.

The 2647A makes graphics as portable as alphanumerics. It interfaces easily with our 9872A four-colour plotter and with our 7245A thermal plotter-printer.

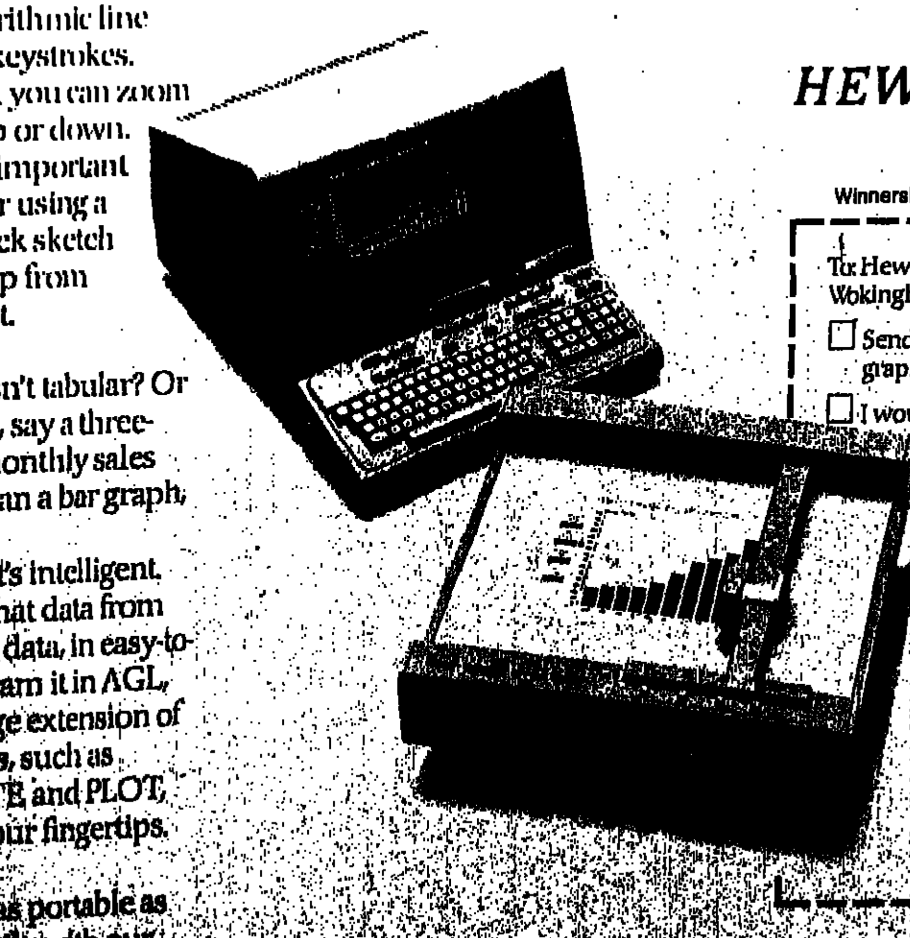
And to keep costs down, more than one 2647A can share the same hard copy peripheral.

You still get alphanumerics.

The 2647A's also a programmable alphanumeric terminal for interactive use on-line or by itself with independent alphanumeric and graphics memories.

It also features a bright, easy to use, high resolution display and a built-in dual cartridge tape drives for 220K bytes of mass storage. And with eight soft keys you can define to do several steps with a single keystroke.

So you don't have to give up alphanumerics to get graphics.



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Lasers, terminals—don't forget the sprouting Fungus

Data Logic

IF Data Logic's new products don't grab you, the lasers will. The company is planning to win all the plaudits for spectacular presentation at Compec 78 by bathing its stand in laser light by courtesy of Holoco, the company which set up the Light Fantastic laser exhibition at the Royal Academy.

Even without the lasers, the products sound interesting. For a start, word processors from Lexitron, the company acquired by Data Logic's parent, Raytheon, will appear.

There are three stand-alone word processors in the Lexitron range, and all feature optional communications for sending and receiving documents from other Lexitron machines and for access and remote job entry to a computer. The VT 1102 is cassette-backed, and the VT 1202 uses single and the VT 1303 dual floppy disc backing store. The keyboard, display and store come in one desk-top unit and the printer in another.

Then there is Raysolve, a new operating system for the PTS 100 cluster terminal system. Emulations currently available on PTS 100 are IBM 3270, ICL 7181 and Burroughs TD, and the operating system adds the ability to cover the full range of data entry tasks such as terminal handling, validation, local printing and file access.

From the MicroLogic division comes the LC2 line controller, which allows up to seven terminals to share the same telephone line with half and full duplex options, with one synchronous and up to three asynchronous lines.

The synchronous line can run at up to 4,800 bps and the asynchronous up to 9,600 baud.

Completing the offerings will be the Intertel range of modems and network control systems.

Texas Instruments

REALLY going to town this Compec, Texas Instruments will exhibit the DS 990 packaged version of its mini and a positive plethora of terminals, most of them new.

Featured on the DS 990 will be the new RPG II programming language, claimed to be "closely compatible" with IBM's RPG II on System 3, and the DBMS 990 database management system. Using the TMS 4116 memory chip, up to 304K words of memory can be included in the basic chassis; up to six display terminals can be attached.

A new member of the Omni 800 terminal family, the 820 will make its bow. The 9 x 7 matrix printer can manage an original and five copies, and prints at 150 chps. Asynchronous communication up to 9,600 bps is supported.

There will be two models of the 771 floppy disc backed intelligent terminal, and four models of the 774, a multistation intelligent terminal system.

The 745 thermal printer terminal, which now features APL, will appear, and the 765 and 763 memory data terminals, the first commercially available devices to use bubble memory storage in place of cassettes or cartridges. The 765 has built-in acoustic coupler.

Fungus Computer Products

THE statistics show that Fungus Computer Products had one of the 10 "most remembered stands" at Compec last year, so the supplier of add-on peripherals for Digital Equipment PDP-11 minis certainly has a reputation to live up to.

Placing the emphasis on compatibility, Fungus will this year exhibit a DEC PDP-11/34 processor sprouting Fungus add-ons by the score.

Among the Fungus products will be 32K and 64K word MOS memories, disc drives with RK05J and F compatibility, high performance storage module drives and controllers, an enhanced version of the Fungus VDU with a new read only memory-based keyboard with programmable function keys, DL11 compatible multi-terminal interfaces, a high performance printer terminal driven by a micro, real-time clock.

And if you simply must have the real thing, Fungus offers genuine DEC peripherals at "greatly reduced prices."

Anderson Jacobson

WELL KNOWN for its printers, Anderson Jacobson is branching out into visual display terminals, and will feature its first product for this market at Compec.

Called the AJ510, it is a fully interactive buffered terminal, allowing transmission by character, line or page. One-off end-user price is £1,295, for another £100 APL is available, and graphics capability can be added for £50.

It has a 15 inch diagonal 1920-character display, includes 19 control and editing keys, runs in full or half duplex asynchronous mode and receives and transmits at data rates between 110 and 9,600 bps.

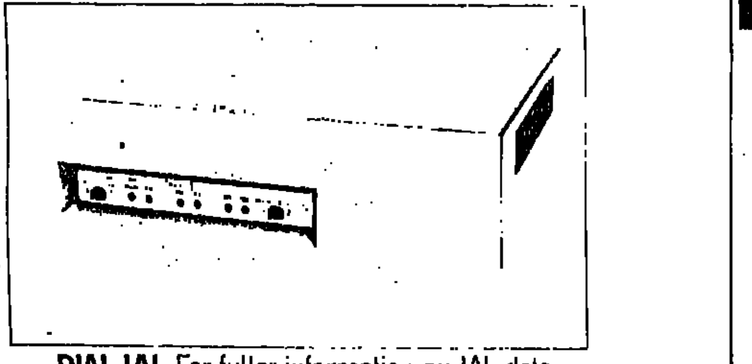
Also to appear are the AJ832 daisy-wheel printer-plotter, the AJ860 matrix terminal with 10, 30 or 60 chps operation, the AJ630 thermal printer, A211 acoustic coupler and AJ430 paper tape unit.

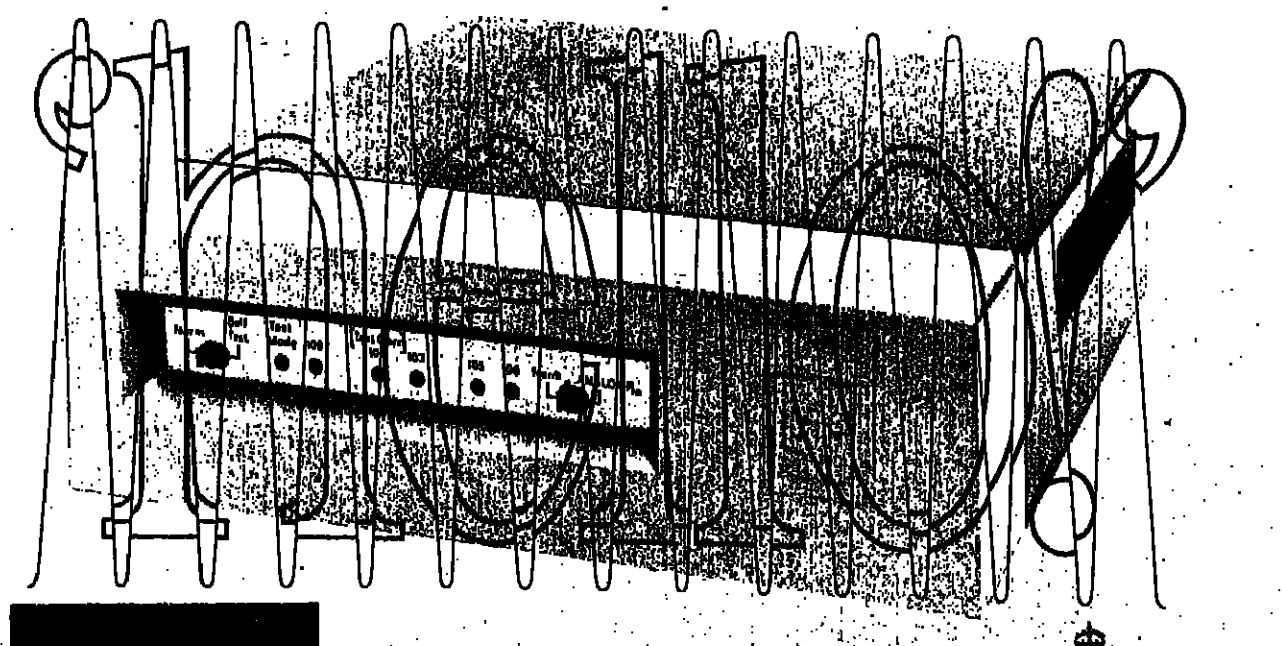
Unilever Computer Services

THE Microsystems division of Unilever Computer Services Ltd will underline the pint-sized power of the microprocessor by showing off its M50 pocket-sized data collection terminal, which is driven by an RCA 1802 eight-bit micro.

The M50 has 20 user-defined keys and an alphanumeric strip display, so it looks like a pocket calculator. But inside it has a basic 16K characters of memory, expandable to 64K, for data, plus 2K characters of program memory. It can transmit data to the computer over telephone lines, and can also display data from the computer.

Aimed at salesmen, store managers, warehousemen and meter readers, the M50 is coupled to the computer by another product on offer from UCSL, the M495 tranceiver. Manufactured in the US by Norand to UCSL specification, it can be programmed for automatic dialling of M50 terminals at set times for data collection and for passing on messages.





Compec through the ages

What on earth (or Olympia) is Modular Technology up to?

Modular Technology

BEST news so far from Compec comes from Modular Technology, the company dedicated to the proposition that it makes good business sense to demonstrate that while life may be real and earnest, there is nothing wrong with the idea that data communications can actually be fun.

"Modular Technology," said the company, "after illustrating communications in previous years using string and a cocoa tin, dressing up as Post Office engineers, and running a lunatic schoolroom, will be entertaining visitors to Compec with the company's usual panache — as well as showing visitors that it is firmly entrenched in the low-cost data transmission market."

The company plans to spring a second surprise at the show, in the shape of a "completely new range of low-cost data transmission equipment".

Also on show will be the familiar red Minimodem 3001 acoustic coupler and the Interdriver LD96A, launched last year. The latter device is designed for short distance communication — up to 9,600 bps.

The Interfaker, which enables V24 sockets to be checked for wiring and the correct interface to be "faked", completes the line-up.

On page 30 we describe the new Datagraphix Mini-Autocom: This is how it looks.

Kode

MAKING its first appearance in the UK, the XL-40 key-to-disc system will be the highlight of the Kode stand.

At present the top model in a new line of data entry systems from Pertec, the XL-40 is a system built around multiple microprocessors, each controlling a specific system function. The central processing unit is an 18-bit microprogrammable microprocessor with a 200 nanosecond cycle.

Supporting up to 16 keystations, local and remote printing, from 8.8 to 70 Megabytes on disc, the XL-40 has emulations for IBM 2770, 2780, HASP, 3740 and 3780, and is programmable in a Cobol subset. ICL emulations are on the way.

Also on offer from Kode will be the DataVet key-to-cassette single-station system backed by one or two drives. The DataVet is beginning to oust paper tape and punched card equipment, particularly in bureau applications.

Kode is European agent for Teletype Corp, and highlight of the range on offer will be the Teletype 43, which features nine-wire matrix print-head, 10 or 30 chps operation, all standard interfaces, and can be fitted with a substantial internal buffer which can store up to two pages for editing.

EMI Technology

A COMPANY which looks as if it really intends going places in the data communications business is EMI Technology. The Pix remote computing facility is designed to allow users of IBM mainframes to set up RJE, remote data entry and remote file inquiry applications without having to implement Vtam or other teleprocessing software on the mainframe.

The Pix local processor looks to the mainframe operating system like a locally installed tape drive controller and uses SDLC to communicate with the remote Pix processor or processors.

EMI Technology is also exhibiting selected items from its line of modems: the 12B which runs at 2,400 bps; the 9640, which has an optional buffered multiplexer and runs at up to 9,600 bps; and the MP4827 microprocessor-controlled device designed to be CCITT V27 bis and ter compatible.

Completing the line-up, EMI will be showing models from the SE8000 tape transports which now have interfaces for Digital Equipment PDP-11 and PDP-8, CA Alpha 16 and DG Eclipse and Nova minicomputers.

3M

THE message is the medium at 3M, and media will abound on the company's stand. The accent will be on minicomputer media, and the line-up will include floppy discs, both standard and mini, disc cartridges, reel tape, tape cassettes and tape cartridges. Accessories on offer will include storage cases for floppy and minifloppy discs.

Smith and McLaurin

THE latest amazing 32-bit mini may cause the technology buffs to turn cartwheels, but the day-to-day problems of the computer installation are solved by equally vital but much less esoteric products. Like labels.

"We can lick your labelling problems" is the challenging claim made by Smith and McLaurin, which will offer visitors a labelling paper which can be used to produce labels on existing line printers.

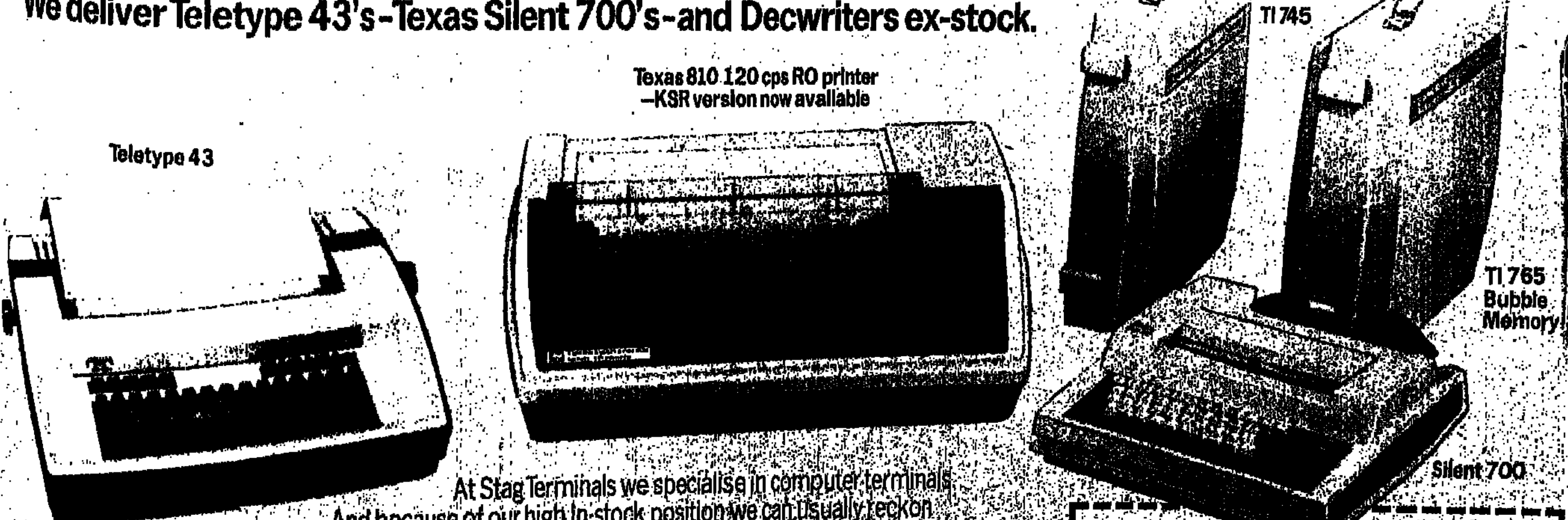
It is further claimed to be cheap and easy to apply, can be used in single or multi-part sets, and labels can be taken from any part of the form, with the rest used for normal records and documentation.

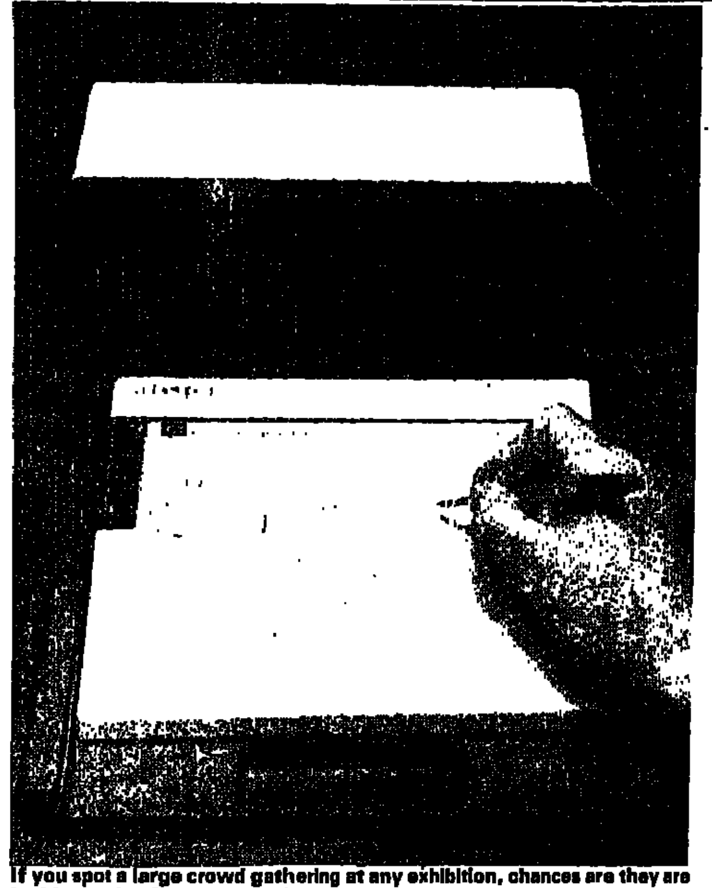
Called Pancake, it is a high tack labelling paper flat enough to satisfy the touchiest line printer. There is also a technique by which labels can be made on any plain paper copier, and visitors to the stand will be shown how this is done.

Quest Automation

NO computer show would be complete these days without an appearance by the Quest Automation Datapad. For those who have not yet encountered the Datapad — if indeed there are such people — the device is designed for direct data entry of handwritten characters.

A strip display keeps the operator's hand-printing neat enough to be recognised by the computer, and up to 32 Datapads can be supported by one controlling minicomputer. The Data General Nova is used, and can batch up the output on magnetic tape, paper tape or online link to a host computer.





If you spot a large crowd gathering at any exhibition, chances are they are looking at the Quest Datapad.

Hot from Harris, and old from Electronics Brokers

Harris

HOT from Harris will be the new S500 family of powerful minicomputers, which are built using AMD 2901 bit-slice micros and made their world debut at the National Computer Conference in California this summer.

The S500 line is upwards compatible with the S100 series, but offers considerable extensions, notably a 48-bit wide path into memory from the standard Harris 24-bit processor, and a 2K word cache with an 80 nanosecond access time to speed operation. The S500 line runs in a compatibility mode for S100 programs, but also has a native mode for new applications.

Harris will also be featuring the S100 line and its Vulcan virtual operating system, via terminals on the stand connected to a machine at its Slough headquarters.

The Harris data communications division will be sharing the stand, offering the new 1670 remote batch terminal, which is claimed to perform five independent functions concurrently, as well as local and remote batch and interactive computing. The Harris, formerly Sanders, 8170 and 8180 range of video terminals will also be exhibited.

Datagraphix

THE small, low-cost Datagraphix AutoCOM recorder, which records computer output on to microfilm, will be shown at Compec in a new version, the Mini-AutoCOM, in which it is front-ended by its own minicomputer. The mini formats the data for recording on to microfilm, a task which otherwise has to be performed on a mainframe. The message from Datagraphix is that COM is now a realistic option for small data processing departments.

Electronic Brokers

IF you are looking for a used minicomputer, a visit to the Electronic Brokers stand may well be worth your while. Electronic Brokers claims to be the largest European specialist in second-hand minis and associated peripherals. The stand will feature PDP-8 and PDP-11 minis and their appropriate peripherals, reconditioned printer and display terminals from TI, Teletype, DEC, GE, Hazeltine Tektronix and Raytheon. Low-cost ROM encoded ASCII keyboards will also be on offer.

Benson

THREE plotters from the extensive Benson range will be on show at Compec: one incremental, one drum and one flatbed.

The incremental plotter will be the top-of-the-line 1312, which uses a microprocessor to provide linear interpolation and character generation. It comes in three plotting widths, 320mm, 730mm and 930mm.

The Benson 1332 is the high-speed drum plotter on offer at Compec. Top of its line, it plots at 350mm per second on diagonals, and again has intelligence for character generation and linear interpolation.

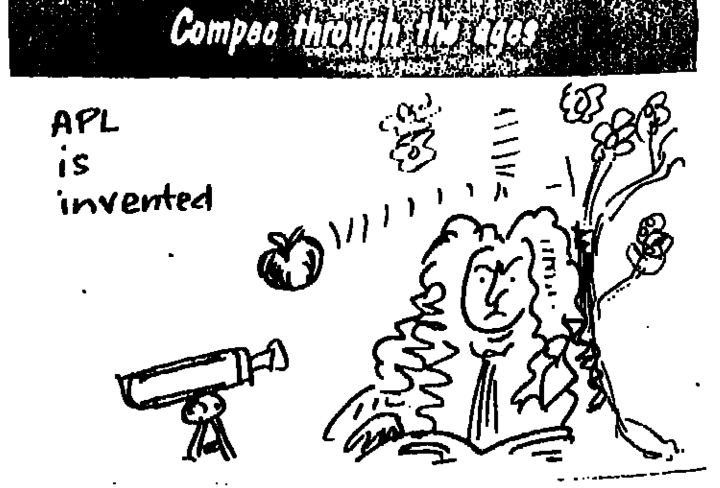
Flatbed plotters, used where overdrawing on existing plots and standardised paper are required, will be represented by the Benson 2222, which has a drawing area of 1.2 metres by 0.84 metres, and plots at 21 cm per second on diagonals.

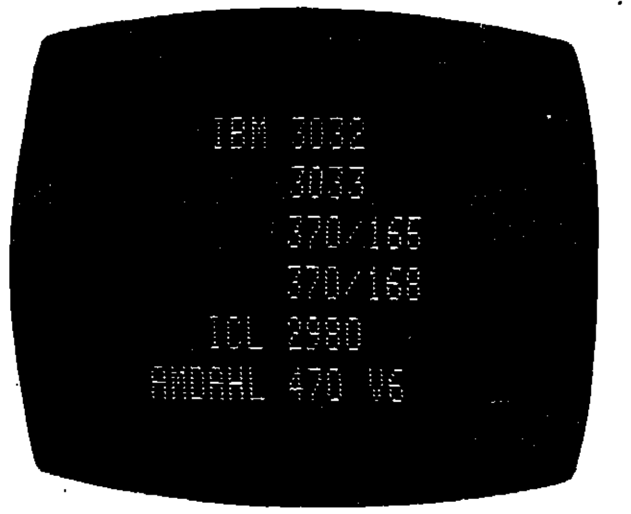
The plotters can all run in both online and offline mode, magnetic tape, paper tape or tape cassette being the alternative media in offline mode.

Decision Data

NEW from Decision Data is the 3240 KSR printer terminal, which is driven by a microprocessor, handles data at up to 1,200 bps and runs at 120 chps using a 7 x 9 dot matrix. Character size and density are variable, there is a quick change cartridge and it can also be used for plotting.

Best known for its punched card equipment, Decision Data will keep faith with its long-standing fans, showing the 8010 80-column buffered key punch, and a 96-column version running online to an IBM System 34 in the City of London. The System 34 was not intended by IBM to use punched cards!





Has Trivector done it again?

Trivector Systems

ONE of the most noteworthy products at Compec 77 was the Triton 3 microcomputer from Trivector Systems, and it looks as if Trivector has done it again.

Centre of attraction will again be the Triton 3, which is built around three Zilog Z80 microprocessors. But a paged memory option enables each of these to address up to 512K bytes of memory directly. In addition, the processors can share common 40 Megabyte discs, or each support one such drive, accessible from all three.

Sintrom/ Microshop

THE Sintrom stand at Compec will represent the ethos of the show in microcosm, with exhibits ranging from electrostatic printers through VDUs to singl board computers, with just about everything in between.

From Perex, Sintrom will offer the 8021 OEM data logger and the 8152 logger for the end user.

Centronics matrix and band printers will line up alongside the Intel single board computer range and microcomputer development systems.

Electrostatic printers from Houston Instruments, the Perex graphics controller and digitiser, and bulk core memory for fast backing storage from Dataram will also be on offer from Sintrom, alongside Kennedy tape transports, Pioneer Magnetics power supplies, floppy disc drives from Siemens and mini floppy drives from Micropolis.

Sintrom Microshop of Reading will also be putting its wares on display, showing Lear Siegler VDUs, Centronics microprinters and a variety of other microcomputer products.

There will be plenty to interest the maincomputer user on the stand, notably bulk core secondary storage for PDP-11, Nova and Interdata minis, and cache memories for the PDP-11 line.

The bulk core, offered as an ultra-fast replacement for disc, emulates an appropriate disc drive from each of the three minicomputer lines, has a capacity of one Megaword, and an access time of 750 nanoseconds.

Cache memories are on offer for PDP-11/34, 11/35, 11/40, 11/45 and 11/50 minis, offer up to 80% improvement in throughput and come in 1K and 4K word capacities.

Add-on memory from Sintrom will include a 240 nanosecond semiconductor memory for the PDP-11/45, and the company also plans to show the Univerter, which converts the LSI-11 Q-bus into a standard Unibus and enables up to 128K words to be addressed.

Logica

THE establishment of a Logica hardware products subsidiary last year may have gone almost unnoticed, but the systems house is taking steps to put that right by staging a presentation of its products at Compec.

Pride of place goes to the Logica intelligent VDU terminal, which will be demonstrated supporting a 200 chps printer and a dual floppy disc drive. Driven by a microprocessor with up to 64K-bytes of memory, the terminal also features horizontal as well as vertical scrolling.

Software includes editing and validation facilities and communications protocols, and will shortly feature multiple tasks in foreground and background, and programming in Cobol and Basic.

Logica is also into modems, and will exhibit 300, 1200/1800, 2400 and 4800 bps devices, as well as a modem interface monitor test unit, modular switching units and a modular data signalling unit which can be used in place of modems over short distances.